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ABSTRACT

This publication highlights several college and university continuing education programs that help strengthen connections between campuses and workplaces. The programs came from a survey on workforce development programs collected in 1993. An introduction, "The Knowledge Connection," explains what the knowledge connection is and how colleges and universities help develop the nation's workforce for current and future challenges. Chapter 1, "Preparing for Work," discusses innovative strategies in programs instituted by colleges and universities related to breaking the cycle of dependency, completing high school, fostering English language skills, and transitioning to four-year institutions. Chapter 2, "Staying Occupationally Relevant," discusses teacher certification, environmental management, health professions, public safety, and retreading engineers. Chapter 3, "Qualifying for the Economy's New Jobs," discusses coping with mid-career transition, assisting dislocated Americans, managing technological change, supporting workforce diversity, converting defense to non-defense needs, retraining military personnel, technology transfer and commercialization, and information sciences. Chapter 4, "Operating on One's Own," examines small business programs, programs for entrepreneurship, and working beyond retirement. Chapter 5, "Functioning Transnationally," examines international management and marketing, transnational exchange programs, and summer institutes for professionals. Chapter 6, "Looking to the Future," discusses challenges to ensuring obligations implicit in a knowledge society. (SM)

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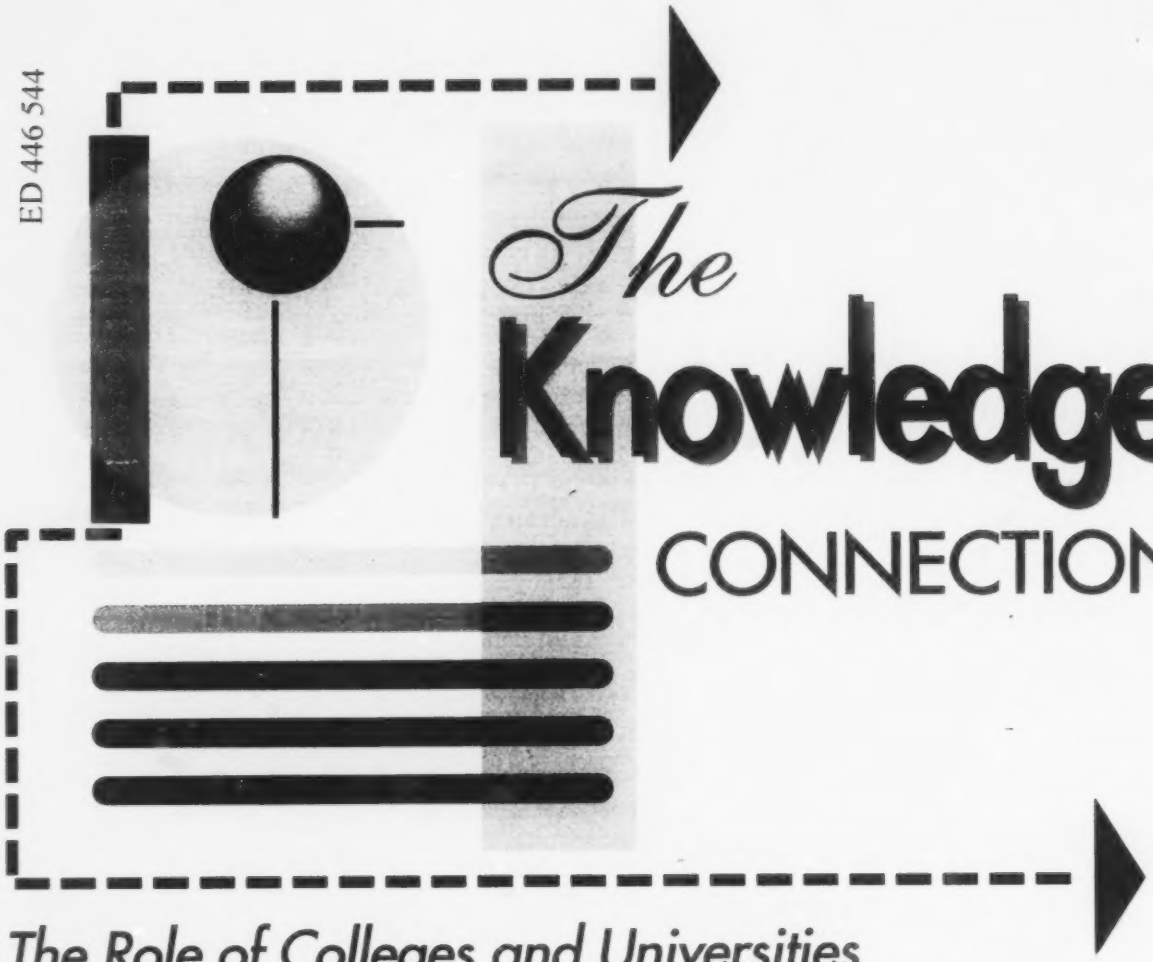

The Knowledge CONNECTION

The Role of Colleges and Universities in Workforce Development

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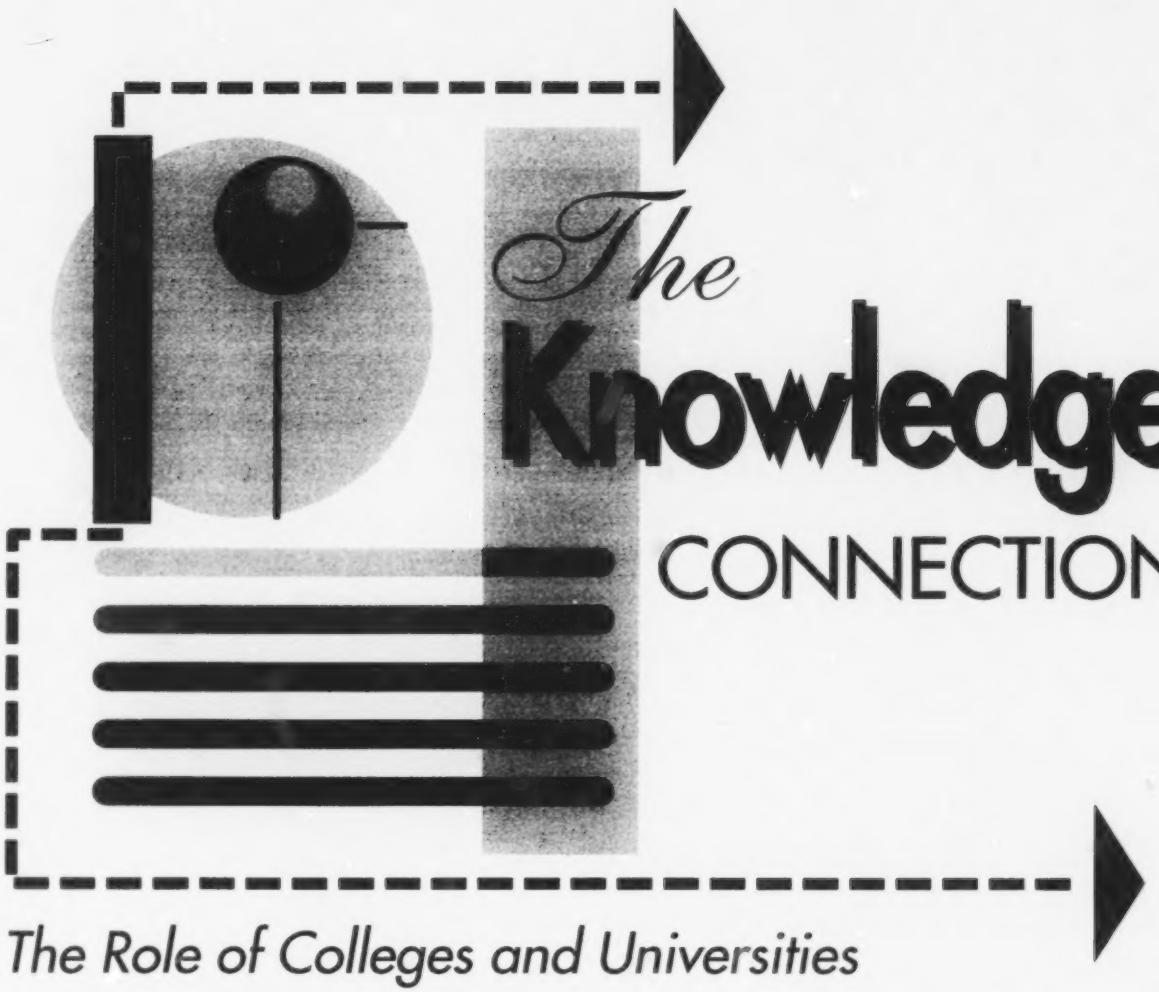

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National University Continuing Education Association

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FOREWORD

Much has been said about the rise of the knowledge society. Indeed, the United States is in the midst of perhaps the most significant economic transformation since the industrial revolution. How well the nation is able to adapt to new competitive pressures at home and abroad depends in large part on how well our higher education institutions meet the growing knowledge needs of our workforce. The title of this publication, "The Knowledge Connection," purposefully links together knowledge institutions and individuals into a single lifelong learning community.

The transformation from the industrial society to the knowledge society affects each of us to varying degrees. For those of us in higher education, this transformation provides enormous opportunities and challenges.

This publication highlights just a small sampling of the many college and university continuing education programs that are helping to strengthen the connection between campus and workplace. The programs cited in this publication were gathered from the results of an Association-wide survey on workforce development programs collected in autumn 1993. To bring this publication to reality, dozens of follow-up interviews were conducted in an effort to ensure that the programs cited represent the institutional and geographic diversity of NUCEA member institutions.

The publication also caps a three-year, public policy initiative on human resource development undertaken by the Association's Board of Directors in April 1992.

J. Noah Brown, NUCEA's director of governmental relations and public affairs, researched and developed the contents of this publication and served as its editor.

Kay J. Kohl
NUCEA Executive Director
April 1995

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INTRODUCTION

The Knowledge Connection

What is the knowledge connection and how do colleges and universities help develop the nation's workforce for current and future challenges?

KNOWLEDGE IS BECOMING MORE IMPORTANT.

The United States' workforce is projected to expand very little during the balance of the decade. Specifically, the rate of growth of the workforce will be less than at any other time during the twentieth century. It is anticipated that some 80 percent of today's workforce will still be working in the year 2005.

This is true in part because of the baby boom generation. Baby boomers, generally acknowledged as those Americans born between 1946 and 1965, account for four in ten adults today. Baby boomers will continue to affect the nation's workforce demographics, raising the median age of workers well into the next century. Twenty years ago, workers aged 16-to-34 comprised nearly half of the workforce. By the year 2005, that age cohort will be eclipsed by workers aged 35-to-55.

THE WORKFORCE WILL CONTINUE TO DIVERSIFY.

While the workforce is projected to increase by 26 million workers by the year 2005, African Americans, Asians, and Hispanics will comprise more than half of that growth. The number of women entering the workforce through the year 2005 will continue to rise faster than the number of men. And a projected increase in the number of legal immigrants to the United States promises to increase further national workforce diversity.

The United States faces several challenges as it prepares for the next century. Existing workers will need to be retrained, while new entrants must be properly prepared for work requiring more education and greater flexibility. As the United States continues its transformation from an industrial-based economy to a post-industrial, knowledge-based economy, a skilled workforce becomes a key ingredient to sustaining the nation's long-term political, social, and economic interests.

The Rise Of The Post-Industrial Knowledge-Based Economy

Accelerating global competition is forcing most nations to emphasize raising workers' productivity in order to compete in a world where change is the only constant. The "new economy" as it known, is a market in which knowledge workers, capable of problem-solving and the flexibility to respond quickly to change, and technology and new organizations constitute core components essential to fostering greater productivity and competitiveness. In such an economy, future productivity gains will come from continuing the current pace of economic restructuring and from investing in a high quality workforce. The rise of the knowledge-based society requires an acceptance of new precepts.

"Future productivity gains will come from investing in a high quality workforce."

1. Learning must be continuous.

The concept of lifelong learning must be embraced by all Americans. The rapid pace of change means that the individual will, on average, change jobs as many as seven times, and careers five times before retirement. The products that today generate revenue in the United States did not exist three years ago. New knowledge is the life blood of competitiveness. For example, the half-life for knowledge, or length of time before knowledge begins to become obsolete, is estimated to be around five years for electrical engineers, and two and a half years for computer scientists. Technology continues to redefine how we work, where we work, and when we work. Increasing complexity will confront individuals and effective problem-solving will require that education be continuous and more multi-disciplinary.

2. Continuous learning requires changing the status quo.

The knowledge-based economy is helping to drive up enrollments in American colleges and universities. More individuals are seeking to upgrade their occupational skills and/or prepare for new work by pursuing college and university continuing education. Fewer employees with work or family obligations can afford to pursue education full-time. Younger workers, too, are reluctant to incur large debts in order to pay for a full-time education. Part-time learning is challenging the traditional way in which individuals pursue higher learning, and how they enroll in higher education institutions. Colleges and universities must become more flexible and responsive to the ever-changing needs of the knowledge society. Flexibility in curricula design and delivery and the ability to respond quickly to demands that education become more work-related and credentials more portable and readily accepted by employers are fast becoming the hallmark of the new knowledge institution.

3. Employer-provided training is no substitute for education.

With earnings increasingly tied to educational attainment, more individuals are seeking higher education credentials in an effort to remain both productive and viable in the knowledge-based economy. This professional or vocational imperative is leading to demand for high quality, substantive education that will be recognized nationally and, increasingly, internationally. With fewer workers spending all or the majority of their careers with a single employer, employer-provided training programs simply are no substitute for a higher education credential that is portable and more readily transferable to new jobs. New covenants are emerging between employers and higher education institutions. These covenants, known as contract learning, enable employers to contract with institutions to provide specialized and flexible programs specifically tailored to their needs.

4. TECHNOLOGY WILL CONTINUE TO INFLUENCE ALL ASPECTS OF CONTINUOUS LEARNING.

The rapid growth of information networking technology is enabling individuals to pursue learning opportunities wherever, whenever, and however they choose. Distance learning is helping colleges and universities to reach farther into the workplace, the home, and around the world, providing ever more timely and relevant educational opportunities so central to building and sustaining the knowledge society.

As the nature of work and learning have changed, so too have college and university continuing education services. Continuing higher education has always been closely tied to the public service or outreach mission of colleges and universities. From its proud tradition of night schools and part-time, degree programs, today's continuing higher education programs cover diverse approaches to societal, public-policy problems. Continuing higher education has expanded to include a wide range of educational formats and curricula, and its roles now include that of problem solver, facilitator and community-development activator.

College and university continuing education will continue to grow in its importance as continuous learning is embraced throughout the economy.

EXPLANATION OF THE SUCCEEDING CHAPTERS

The chapters that follow examine how college and university continuing education programs are helping individuals to join the knowledge society and to pursue continuous learning.

Preparing for Work explores programs that assist people who are unable to reap the benefits of the new economy because they lack the necessary educational preparation and/or are imprisoned by welfare dependency.

Staying Occupationally Relevant looks at programs that assist professionals to adapt to changing occupational requirements and economic restructuring.

Qualifying for the Economy's New Jobs examines the role of college and university programs in assisting individuals transition to new jobs and new sectors of the economy, including the conversion of defense industries and personnel to civilian needs.

Operating on One's Own explores the development of new entrepreneurs, the rise of small and family-owned businesses, and educational needs of older workers and adults of retirement age.

Functioning Transnationally looks at programs designed to prepare professionals to compete transnationally in the new world order.

Finally, in *Looking to the Future*, looks at how public policy can address the increasing knowledge needs of the economy and how college and university continuing education programs might support the workforce of the future.

ONE

Preparing For Work

While continuous learning is essential to navigating in today's complex labor markets, many individuals are entering the workforce without the preparation required to secure a job with a future. These include high school graduates, as well as those who dropout of high school, welfare recipients, the under- and unemployed, adults with limited English-proficiency, and persons without basic work skills.

Individuals who do not continue their education beyond high school are apt to have difficulty finding work that provides some measure of economic security. According to U.S. Census Bureau analyses, the more education adults pursue, the higher their annual earnings.

For instance, the mean annual earnings of college graduates in 1992 were twice those of high school graduates. A typical high school graduate had mean annual earnings of $18,737, compared with $32,629 earned by a college graduate (see figure A on next page). Estimated over an individual's working life, a high school graduate can expect to earn $821,000 in current dollars versus $1,421,000 earned by the college graduate. Individuals with a professional degree (i.e., law or medicine), can look forward to lifetime earnings of $3,013,000.

Dollars aside, continuing one's education beyond high school is becoming essential to staying in the workforce. In an economy where employers place a premium on highly skilled, flexible workers, ensuring occupational competency implies continuous learning. Successfully integrating new technologies in the workplace successfully requires not only a new set of core skills and competencies, but a new covenant between employer and employee that encourages direct participation in decision-making and recognition and reward for innovation.

One hundred years ago, commodities such as land, labor, and capital constituted the principal production inputs. Companies with growing supplies of such commodities tended to dominate their competitors. With today's communications technologies and modern transportation systems, companies around the world can more easily gain access to the raw materials and labor markets needed for production, and bring their products and services to the marketplace much faster.

Companies that can successfully harness the specialized skills and knowledge of their employees' are likely to be the winners in the global economy. The

"Ensuring occupational competency implies continuous learning."

ability to direct human talent and creativity toward solving problems constitutes the hallmark of successful companies today.

To assist individuals to prepare for work and to pursue continuous learning, colleges and universities are initiating a multitude of creative and cooperative approaches to enhancing the educational and skills levels of adults. At the same time, efforts aimed at reforming the nation's educational and welfare systems emphasize strengthening the connection between learning and earnings.

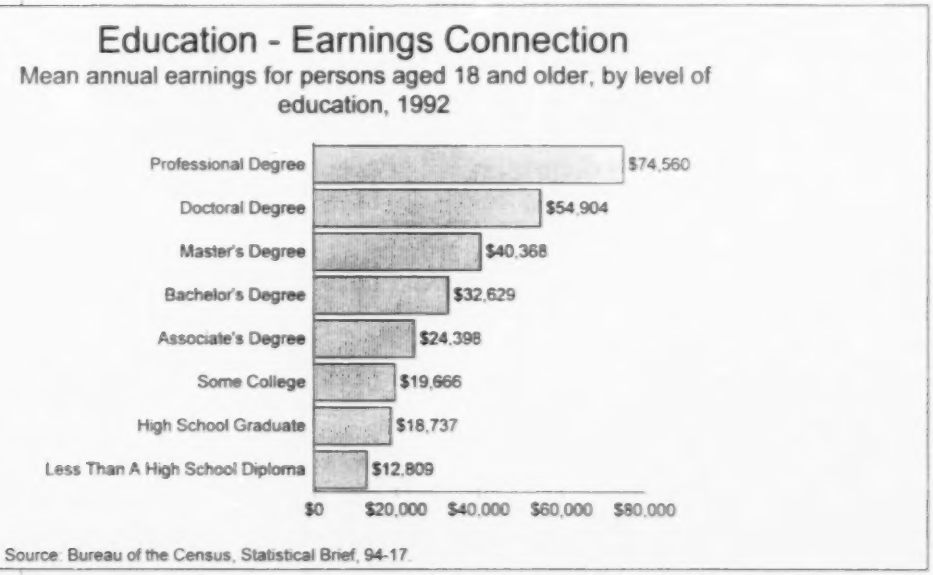
For example, K-12 educational reformers argue that national performance standards are needed to ensure that individuals who earn high school diplomas demonstrate specific levels of literacy in core subjects. Such subjects include English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography. By promoting a "national" curriculum, reformers envision a nation in which schools are equipped to teach students to think and reason critically, preparing them for responsible citizenship and for productive lives where continuous learning is a core value.

Helping Break The Cycle of Dependency

Welfare reformers emphasize ending dependence by promoting real opportunities for benefits recipients to pursue education and training programs that help prepare them for work and long-term financial self-sufficiency. As of 1992, there were 8 million poor families in the United States, as compared with 7 million in 1990, 6 million in 1980, and 5 million in 1970. Female-headed families account for over half of all poor families. Regardless of whether welfare monies are turned over to the states or programs continue to overseen by Washington, most reformers agree that fundamental changes must be made in welfare programs to take account of increasing poverty and changing family structures.

The success of any efforts to reform the welfare system depends upon the capacity to link together resources at many levels, and a willingness to try several approaches simultaneously. Some very innovative strategies can already be found in programs initiated by college and university continuing education divisions.

Figure A



Source: Bureau of the Census, Statistical Brief, 94-17

▶ Literacy Skills Via Distance Learning

The University of Mississippi's Project Learn, Earn, and Prosper (LEAP) is a distance education program that helps individuals with poor literacy skills to better themselves. Originating from the University campus in Oxford, and working in partnership with the Governor's Office of Literacy, the federal government, and the Mississippi Cable Television Association, welfare recipients are able to earn their high school credentials by completing video courses at some 80 remote sites around the state. Many of the program's participants qualify for jobs even before completing the program.

▶ A College Degree Opportunity for AFDC Recipients

Morgan State University's Improved Opportunities for Parents degree program is a cooperative venture involving the University, the Mayor's Office of Economic Development, the Baltimore City Public School System, and the Department of Recreation. Students work toward a college degree by studying for two years at off-campus locations in the metropolitan Baltimore area, with the final two years spent on Morgan State's campus. The program serves individuals receiving Aid to Families with Dependent Children (AFDC) and who have earned a high school diploma or GED.

▶ Project C.O.R.E.

Rutgers, The State University of New Jersey, provides an intensive, one-year aftercare program for youth returning to their communities after incarceration in New Jersey's Division of Juvenile Services. Known as C.O.R.E. (Communities Organized to Regain Their Environments), the program is spearheaded by the Cook College Office of Continuing Professional Education and is the State's first aftercare program to help rehabilitate young people in the communities where they originally got into trouble. The program is multi-disciplinary and is based at the Rutgers Newark campus, and also uses additional campuses in New Brunswick and Camden. The program brings together a diverse group of community-based organizations and Rutgers faculty to provide job preparation and placement, GED preparation, high school reentry preparation and placement, basic skills development, cultural development, community service, entrepreneurism, vocational exploration and training, and family building. The program was initiated in early 1994, and has successfully placed more than 70 percent of the participants, in part due to the intensive intervention strategies employed by program staff.

▶ Empowering Public Housing Residents Through Education

Lamar University in Beaumont, Texas, helped create an urban outreach project directed at the 10,000 residents in the Washington Apartment-Homes in West Oakland and Pear Orchard sections of Beaumont. The program, developed by The Craver Institute of Houston, Texas, focuses on self-

"Efforts to reform the welfare system depend upon the capacity to link together resources at many levels"

The University of Mississippi's Project LEAP is helping welfare mothers through instructional programs.
Photo by Robert Jordan, courtesy of the University of Mississippi

empowerment of the individual and family unit through education and opportunities for civic responsibility. The program demonstrates the capacity of continuing education to assist individuals and families in subsidized, low-income public housing in achieving personal, social, and economic self-sufficiency, while enhancing the neighborhood and community in which residents live and work.

High School Completion

The earning prospects for individuals who do not complete high school are apt to be very limited. Already, the disparity in median earnings between high school graduates and those who have not competed high school is large and growing. In 1991, for example, the median annual earnings for male high school graduates aged 25 was $22,482, compared with $11,394 for males with fewer than 9 years of formal education. Female high school graduates aged 25 and over earned on average $12,069, compared with $7,409 for females with fewer than 9 years of formal education.

Colleges and universities are helping individuals without high school credentials get back on track and qualify for work. In many cases, these students will then continue on to earn a four-year college degree.

▶ High School Via Correspondence

A university can also be a high school. At Texas Tech University individuals can earn their high school diploma. Accredited by the Texas Education Agency as a high school, Texas Tech allows students to pursue a program of guided independent study enabling them to earn their high school diploma upon completion of the program. Texas Tech University High School has grown to become one of the largest university high schools in the United States. The success of the Texas Tech program illustrates the value of using a university's resources to assist individuals to obtain their high school diplomas regardless of personal circumstance.

▶ Serving Migrant Students

The University of Texas at Austin offers children of migrant workers an opportunity also to earn their high school diplomas. With the support of the Texas Education Agency, the Migrant Student Program provides a real alternative for migrant students to earn high school credit while accompanying their parents who must travel the state during harvest season. The program allows students to continue their high school studies without fear of falling behind, becoming discouraged, and dropping out of school altogether.

Fostering English Language Skills

By 2005, it is estimated that one-quarter of the U.S population will be Spanish-speaking. The influx of immigrants - especially from the South—is creating a demand for programs that address the needs of limited English-proficient students. For many young Americans and their parents, English is not the primary language spoken at home or in their neighborhood. Data collected by the U.S. Department of Education from 43 states responding to its survey show com-

bined public and private school enrollments of nearly 2 million limited-English proficient students in 1990. Five states—Alaska, Arizona, California, New Mexico, and Texas—are experiencing significant increases in the number of limited-English proficient students in the elementary and secondary schools, while grappling with bilingual teacher shortages.

Colleges and universities are helping to alleviate problems created by increasing numbers of individuals who do not possess needed English-language skills. Programs to train bilingual teachers and to provide students with English-as-a-second-language opportunities have been growing. These programs typically address language needs through collaborative formats and language-intensive courses and workshops, or through language and cultural immersion.

"Five states—Alaska, Arizona, California, New Mexico, and Texas—are experiencing significant increases in the number of limited-English proficient students"

▶ Spanish for School Teachers

The University of Houston's Accelerated Language Program helps school teachers to acquire Spanish proficiency through an accelerated learning/teaching program. Through a series of workshops, teachers participate in a curriculum designed to equip teachers with strategies and techniques that increase their own learning and teaching, that of their students and school administrators. Through immersion, teachers improve their written and spoken language skills three times faster than through more traditional classroom instruction. This allows teachers to acquire Spanish-language skills faster and to return to the classroom where they can assist students with limited English skills to learn.

▶ ESL Via Television

The University of Nevada-Las Vegas utilizes instructional television both to teach school teachers Spanish and offer English-as-a-second-language courses. Teachers develop second language proficiency, understand the different types of second language programs, explore different methods for promoting second language proficiency, and master the approaches and methodologies employed in the teaching of second languages. Instructional television allows teachers to view courses at school sites off-campus.

Making The Transition to 4-Year Institutions

Increasing emphasis on high skills is encouraging many individuals to obtain a baccalaureate credential in order to enhance their employability. The transition to a four-year college or university is difficult for students who are academically ill-prepared, or where geography prevents them from attending a four-year institution.

Familiarizing students with campus programs and campus life and articulation between two- and four-year institutions helps to ease the transition to a university. Two-year colleges are linking with four-year universities to assist students to obtain a four-year credential. Programs that attract potential students to campus where they learn about campus life and higher learning are

Young language learners role-play in the University of Houston's Summer Language Camps for Youth, part of the Accelerated Language Program.
Photo courtesy of the University of Houston

helping minority students and traditionally under-represented populations come to campus.

▶ Two-Plus-Two Programs Provide Access to BA Degrees

Two-plus-two baccalaureate degree programs, built upon partnerships between community colleges and four-year institutions are expanding access to baccalaureate degrees. Agreements between Florida A & M University and Santa Fe Community College (141 miles from Tallahassee), between Florida A & M and Miami-Dade Community College (463 miles from the Florida A & M campus), and between Florida A & M and Cecile Air Field in Jacksonville are facilitating the delivery of upper division engineering technology courses to older and working students in those communities. As a consequence, students no longer need to travel to Florida A & M in Tallahassee to complete a four-year degree in engineering technology. It is also possible to obtain a degree in criminal justice from Florida A & M through its two-plus-two program at Chipola Junior College in Marianna, Florida.

▶ Information Networking Degree

The University of Minnesota offers a baccalaureate degree in information networking in partnership with North Hennepin Community College. The partnership between the University and a community college helps both institutions in meeting the growing demand for degree programs that enable individuals to work in one of the fastest growing information fields. Students complete their first two years at Hennepin, and their final two years at the University. Students who complete the program receive their bachelor's degree from the University of Minnesota through Continuing Education Extension. A second program is offered in partnership with Inver Hills Community College in applied business.

▶ College Prep Programs

Brigham Young University (BYU) offers one of the largest independent study programs in the nation, with some 16,000 enrollments annually. Among BYU's offerings are six programmatic areas designed to assist individuals to prepare for and attend four-year institutions. Programs include independent study courses for high school students designed to enable them to obtain their diplomas; counseling for students preparing to take the General Equivalency Diploma (GED) exam; and courses to prepare students to do well on the ACT college admissions exam. Other programs include a vocational/technical course series for students enrolled in two-year programs that provide 24 credit hours; and a college prep series of home-study courses for students seeking to enroll in a college or university. In addition, BYU offers six limited diplomas to qualified high school students.

▶ Prep Camp Teaches College Survival Skills

Eastern Illinois University hosts an annual, one-week Leadership and College Prep Camp for academically qualified minority high school students. Participants reside in University residence halls, where they have an opportu-

nity to experience life on a four-year campus. Students participate in activities designed to develop their leadership skills, study skills, and communication skills. The camps boost students' confidence in their abilities to succeed in college, to set academic goals for themselves, gain necessary college survival skills, and become familiar with a comprehensive university's operations and resources. Students also learn about college admissions, financial aid and scholarships, housing, academic majors, all of which promote college success.

▶ Alaska Wilderness Studies Program

The Alaska Wilderness Studies (AWS) is the outdoor educational arm of the University of Alaska Anchorage, located in the College of Community and Continuing Education. The AWS has been offering experiential adventure learning to a unique blend of community, outdoor professionals, and students for more than 20 years. Specifically, AWS serves Alaskan Native high school students through a summer institute. Juniors and seniors from outlying Alaskan Native villages come to the University campus for six weeks each summer for an accelerated introduction to college. Typically, students come from a geographic region stretching from Ketchikan to Kotzebue—a distance of well over 1,000 miles. AWS also offers an annual Wilderness Youth Leadership Development camp, serving at-risk students in the state.

▶ University/Technical School Collaboration

Millersville University of Pennsylvania helps working adults pursue a certificate in data processing and access an opportunity to continue their studies toward a college degree. The five-course program is cosponsored by Millersville and the Lancaster Country Area Vocational and Technical Schools. Students who complete the program receive certificate and as many as 10 credits toward an Associate's Degree in Computer Science, or a computer science minor applicable to other University degrees. The credits issued by Millersville University are also recognized by other colleges and universities and are transferrable to other degree programs.

▶ Indiana Partnership for Statewide Education

A partnership among the seven public institutions in Indiana is enabling state residents to access higher education with relative ease, regardless of their geographic location, and shortening the time to degree by improving articulation among different types of institutions. The Partnership includes Indiana University, Purdue University, Ball State University, Indiana State University, University of Southern Indiana, and Vincennes University. Students enrolled in one of the Partner institutions may transfer up to 10 general courses. Moreover, the Partnership allows students to frequent any one of four hundred distance education sites across the state and earn an Associate Degree through the Indiana Higher Education Telecommunications System. Sites include schools, hospitals, business, and other institutions. The system is satellite-based, and uses computer, two-way audio and video, and well as videocassettes. Eventually, the Partnership wants to deliver baccalaureate and master's degrees statewide via distance education.

▶ Technical and Occupational Training Department

Following the reorganization of the state's higher education system, the continuing education function of the former Missoula VO-Tech institution now resides within the Division of Continuing Education and Summer Programs at the University of Montana. The Technical and Occupational Training Department, created in 1994, is charged with developing a range of programs and consulting services to address the education needs of business and industry. The Department hopes to rely increasingly on distance education to reach employees in need of training and retraining. The Division plans to develop various certificate and degree programs designed for working adults.

TWO

Staying Occupationally Relevant

Work is becoming more highly specialized. Over the next 10 years, occupations requiring higher levels of education and ever-changing competencies are projected to be the fastest growing segments of the economy (see figure B next page). Increasing specialization necessitates a new system of education and training, one which emphasis the continuous updating of skills and competencies.

Too much priority is still being placed on "front-loading" career-oriented education and training. Under this paradigm, individuals are provided with the basic principles and concepts that are supposed to serve them over their working lives. Change is limited to occasional updating of skills or concepts. This model is failing to provide for the knowledge needs of the new workforce. Today, staying occupationally or career relevant implies mastering new competencies, adapting to new career or work patterns, new organizational models and structures, and acquiring new credentials. Seeing to the knowledge needs of the new workforce means individuals' skills must be continuously updated and renewed.

Increasing specialization and economic restructuring are prompting mor professionals to seek occupationally relevant educational credentials. College and university certificate programs provide recognized benchmarks of occupational proficiency and/or subject mastery. Increasing numbers of employers and professional organizations and societies are recognizing the certificate as an important educational credential and prerequisite for employment and/or promotion.

Once considered only an academic degree in route to a doctorate, the master's degree is becoming both a terminal degree and a professional credential. With the emphasis on increasing levels of education, employees and employers are creating new demands for master's degree programs that are both geared to growing professional specialization and certification. At the same time, degrees are becoming more multi-disciplinary in response to the increasing complexity of work and the need to adapt more readily to growing competitive challenges in the workplace.

Teachers' Certification

Demands for reform of America's K-12 educational system, coupled with the need to constantly renew teachers' skills, are highlighting the need for teacher certification programs. In addition, local educational agencies are looking at nontraditional sectors in an effort to recruit more individuals into the teaching profession. There is a need for a diverse pool of qualified teachers who can serve as both role model and educator to new students. Teachers need a more comprehensive knowledge and understanding of the concepts and subjects that they teach if students are to achieve higher levels of academic achievement.

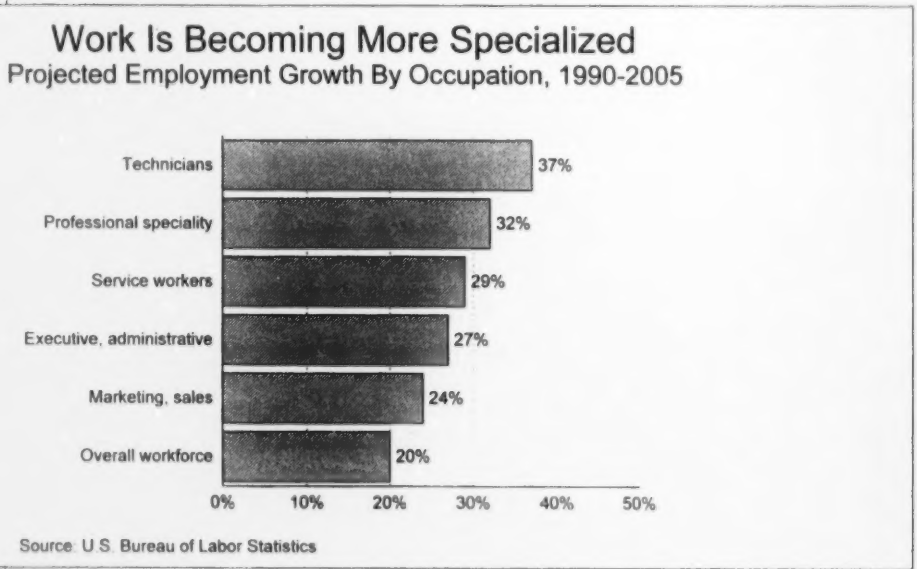
▶ Continuing Education for Teachers

The Office of Continuing Education at Chapman University in California offers a variety of programs designed to help California teachers meet re-licensure requirements and to further their professional development. Initiated over a dozen years ago, the University's Orange County Campus began offering several weekend workshops, practica and travel-study programs for teachers. The programs address current issues relevant to classroom teaching professionals, such as cross-cultural issues, language studies, and methods for dealing with "at-risk" students. In addition to educational programs, the use of practica allow elementary and secondary school teachers to bring their work directly into the classroom, and to apply learned principles to practice.

▶ NASA Teacher Resource Center

The University of New Mexico Division of Continuing Education and Community Services is seeking to strengthen science instruction in the schools with the assistance of the National Aeronautics and Space Administration (NASA), which has donated videotapes, slides, cassettes, and audio/visual materials and other aviation and space publications. The materials are housed in a resource center, and can be used by classroom teachers to support their in-

Figure B



struction and to give students firsthand exposure to space and flight materials. In addition, the University cosponsors the Aerospace Careers Education (ACE) program that introduces New Mexico youth to aerospace technology by bringing real aircraft to them for closer inspection, including landing strips on Native American reservations.

▶ Institute for Restructured High Schools

The Division of Continuing Education at the University of Virginia helps public and private schools to restructure successfully. The Institute for Restructured High Schools was created both to identify new organizational models for possible replication by Commonwealth of Virginia schools, and as a response to the Virginia Department of Education's World Class Education initiatives. Participants in the Institute are helped through the logical process of rethinking the purpose of education and in developing effective plans to meet individual school missions. The Institute teaches the skills necessary to implement these plans and how to secure external funding to facilitate the desired changes.

▶ Making the Transition to Teaching

Johns Hopkins University in Baltimore, Maryland, assists students with diverse bachelor's degrees to qualify for state teacher certification. The School of Continuing Studies offers two program formats for adults seeking to become classroom teachers. Students may complete a State Department of Education-approved program through Hopkins that enables them to become certified. In addition, Hopkins offers a Master of Arts in Teaching degree for mid-career professionals who wish to retrain to become Maryland school teachers.

▶ Extended Campus Ed.D Program

The University of Kentucky College of Education initiated an extended-campus Ed.D. program to prepare a new cadre of school leaders to implement the state's K-12 Education Reform Act. The two-track doctoral program relies upon two- way interactive compressed video, and serves both higher education administrators and public school personnel. This system allows students to see and hear the instructor and students at three primary sites, and enables the instructor to interact directly with the students. The University's Office of Extended-Campus Programs helps to ensure the program's success through a variety of student services, including: toll-free telephone lines in and outside of Kentucky; phone and mail admissions and registration; textbook order system; local site coordinators and directors who act as academic liaisons and advisors; and extensive library services including computerized searches,

"Demands for reform of America's K-12 are highlighting the need for teacher certification programs."

The Aerospace Careers Education program at the University of New Mexico helps to bring aircraft to students around the state.
Photo by Ken Hackman, released by the U.S. Department of Defense

interlibrary loan, mailing of book and journal articles, and cooperative agreements with local community college libraries.

▶ M.A. in Education Internship Program

A program designed by Continuing Education at Eastern Oregon State College (EOSC) is enabling teachers to take courses towards a Master of Teacher Education degree in their schools without necessitating travel to the EOSC campus. EOSC use the Oregon telecommunications network, ED-NET, to deliver core academic courses to a variety of sites in rural and isolated areas. By relying upon compressed interactive video technology and computer conferencing to deliver instruction into public schools where teachers work, EOSC is helping to certify teachers who might otherwise find it difficult to earn an advanced teaching credential because they teach in primarily rural settings.

▶ Master's Degree Speech Language Program

The University of Tennessee, Knoxville offers a Master of Arts degree to speech and language teachers through a compressed video system that provides fully interactive, two-way audio and video in the classroom and participating sites. Students in as many as six different remote sites may be listening, watching, and participating simultaneously in the courses offered through the degree program. The program uses the statewide video network, EDNET, which is comprised of five institutions and the utilization of three "smart" classrooms located on three different campuses. The degree program assists public school speech language pathologists to meet state requirements recently approved by the Tennessee Board of Education.

Environmental Management

With concern growing over protecting the environment, "green technologies," and the risks imposed by defense conversion of military installations to civilian uses, the demand for programs in environmental management, hazard reduction, and compliance is growing. The transnational nature of manufacturing and product development is helping to raise awareness of the need to ensure environmental standards across national borders. And the mobility of workers suggests that professionals will need to understand foreign environmental regulations and methods of compliance in order to fulfill their professional responsibilities.

College and university continuing education programs to help prepare professionals for fields where there is environmental impact are multiplying and involve partnerships among federal, state and local organizations. As the economics of environmentalism are better understood, more companies are looking for programs that give their employees the skills and tools for applying environmental technologies while enhancing productivity and competitiveness.

▶ Transportation Planning for Air Quality

The University of California-Riverside Extension offers a certificate designed for transportation and land-use planners. The program, offered in cooperation the California Department of Transportation with financial support from the South Coast Air Quality Management District, trains managers in the California public transportation and related planning areas who are respon-

sible for making decisions about transportation and air quality issues in the state. The certificate program is one of several offered by UC-Riverside Extension's Environmental Management department.

▶ Hazardous Materials Management

The University of California-Berkeley Extension, with assistance from the Alfred P. Sloan Foundation, offers an electronically delivered, distance learning version of Extension's Certificate Program in Hazardous Materials Management. The program consists of nine courses and relies upon a curriculum that has been extensively field-tested; more than 2,500 students have completed the certificate program and more than 50,000 course enrollments have been logged since the program was created in 1983. Electronic media allow the program to be delivered on-site through electronic mail, computer conferencing, and in some cases, through videocassettes.

▶ Program for Land Surveyors

The University of Wyoming provides a program to assist land surveyors in satisfying state requirements for licensure. The Wyoming Legislature has mandated that surveyors must complete 30 hours of formal education in order to become eligible to take the Land Surveyors exam. The program uses distance education technologies, with the primary link being an audio teleconferencing network that can be augmented with videocassettes. This system enables students to complete their course work from virtually any site in or outside of the state. Students are generally individuals who are working in environmental management or who wish to change careers to enter the land management field. Agencies such as the Bureau of Land Management, U.S. Park Service, and State Highway Department regularly encourage employees to enroll in the university program.

▶ Center for Environmental Education and Training

In 1991, The University of Kansas combined the resources of a research university with those of local business and industry to create the Center for Environmental Education and Training. Located at the Kansas City Regents Center, some 35 miles from the main campus in Lawrence, the Center is overseen by the Division of Continuing Education. The Center incorporates a broad-based, multidisciplinary approach in its environmental education and training programs. A national advisory board of senior-level officials from the public and private sectors guides the Center's activities. The Center's courses regard asbestos, hazardous materials/hazardous waste, lead abatement, environmental education, environmental compliance, occupational health and safety, pollution prevention, clean water, and small business assistance.

"Demand for programs in environmental management, hazard reduction, and compliance is growing."

Hazardous waste professionals learn about removing lead from worksites.
Photo courtesy of the University of Maryland Regional Lead Training Center

▶ Safe State Environmental Program Services

The University of Alabama College of Continuing Studies provides expert consulting services to Alabama employers concerned with environmental and safety issues. The Safe State Environmental Program Services has enabled businesses around the state to meet environmental regulations, reduce their clean-up costs, and in some instances, avoid state and federal fines. The Program's staff consists of engineers, certified industrial hygienists and others, and taps university faculty and researchers to provide consulting services. The Program is self-supporting, and clients' fees are usually charged on a cost-only basis.

▶ Undergraduate Program in Environmental Studies

University College of Northwestern University offers students the opportunity to earn a four-year undergraduate degree in environmental studies. The interdisciplinary program provides students with solid exposure to the sciences, and seeks to help students understand the connection between the sciences and environment issues and management. Students come from a variety of backgrounds, and include individuals seeking to change careers or move into environmental fields.

Health Professions

The rapid specialization of medicine and the health professions, coupled with increasing pressure to streamline and reduce rising health care costs, are creating ever-greater demand for programs that prepare, and in many cases, certify health care and allied health professionals. With more and more medical services being rendered by non-physicians, hospitals and health care facilities are seeking programs that help prepare their personnel for working with patients and their families. Also, the proliferation of medical technologies used to diagnose and treat individuals is requiring a greater sophistication in managing and administering health care.

Rising health care costs and exponential growth in medical technologies and interventions have prompted the health professions to require continuing education for professionals. States have joined the movement by mandating continuing education for a growing number of medical and health care specialties for professional licensure. As a result, colleges and universities have responded with programs tailored to meet the growing certificate and specialized knowledge needs of health care professionals.

▶ Patient Relations

The University of Georgia's Patient Relations Specialist Certificate program is intended for hospital professionals who regularly deal with patients and families in high-stress situations. Developed with support from the W.K. Kellogg Foundation, the program seeks to meet the special needs of health care professionals in crucial, high-contact areas. The Patient Relations Specialist program requires students to complete a number of continuing education courses in order to become certified. It teaches basic listening skills, and advanced interpersonal skills, and helps participants to manage patients and to exercise leadership when circumstances warrant. Offered through the Georgia Center for Continuing Education, the program may be taken either

as a two-week, intensive on-site program, or as an independent study program.

▶ Central Services Personnel

Purdue University in Indiana offers a correspondence course to help health professionals become registered central service technicians. These individuals constitute one of the fastest growing allied health professions, and include personnel in hospital administration, treatment supervisors, operating room infection control workers, and materials managers. Offered through University Continuing Education, students have up to one year to complete the correspondence program. Together with the Continuing Education Units earned through the course and professional experience, students can qualify to take an examination developed by the International Association of Health Care Central Service Materials Managers, allowing them to become professionally certified in their fields. Once certified, professionals continue to receive regular education and training in order to remain licensed.

▶ Serving Health Insurance Carriers

The University of South Carolina has developed a customized undergraduate program for employees of Blue Cross/Blue Shield (BCBS) of South Carolina. BCBS executives approached the University in 1994, with a request for assistance in upgrading the skills of the insurance company's workforce. Increased computerization of health care claims placed new demands on BCBS employees. In response, South Carolina developed a program that provides televised undergraduate degree courses to employees on-site through the statewide closed-circuit television network. University instructors are also on-site at the BCBS headquarters in Columbia. Because the majority of BCBS employees spend so much of their time on the telephone, the University created an electronic mail system to connect BCBS employees directly with University faculty. BCBS reimburses up to 75 percent of an employee's tuition and book expenses and permits individuals to select a degree program that will best enable them to become more effective employees in a highly competitive, customer-service oriented industry.

▶ Health Care Administration

The University of South Dakota offers a Master of Science in Administrative Studies degree, with an option in health care management. The degree program is a cross-disciplinary program that provides the core academic and managerial skills necessary to enable health care professionals to manage resources more effectively. The program responds to a growing recognition that health care professionals confront multi-disciplinary issues when helping patients. The program is designed for working professionals wishing to become better managers and administrators, and courses

"Proliferation of medical technologies is requiring a greater sophistication in managing and administering health care."

Occupational and physical therapy constitutes one of the fastest growing medical sub-specialities
Photo by Jim Price, courtesy of New York University

can be taken in classrooms offered at three locations off-campus, or through telecourses and/or interactive network classrooms.

▶ Nursing Management Certificate Program

The Division of Extended Education at California State University, Fresno offer practicing nurses the opportunity to assume greater leadership and managerial positions through its Nursing Management Certificate Program. The program blends theories of business management with nursing to enable students to become better managers. The program consists of five sessions, totaling 31 hours, and results in a Certificate in Nursing Management. The program content also enables students to prepare for the American Nurses' Association exam in Basic and Advanced Nursing Administration.

▶ Primary Health Care Nurse Practitioner Program

The University of Washington offers a post-master's degree certificate progra for nurses who wish to prepare for careers as primary care practitioners, or nurse practitioners in adult, family, or geriatric specialties. The program typically lasts 12-months and includes classroom instruction and clinical practica in primary health care. The program is administrated by University of Washington Extension and was developed and approved in partnership with the University's School of Nursing.

▶ Master of Science in Health Sciences

An agreement between the University of Arkansas Division of Continuing Education and Washington Regional Medical Center is enabling health care professionals and administrators to earn a master's degree in health sciences. Delivered on-site by university faculty at the Washington Center, the largest medical facility serving Northwest Arkansas, the program uses a compressed instructional format consisting of eight to nine weeks per semester. This compressed format enables students to complete the required 33 semester hours at an accelerated pace and accommodate their studies to busy professional schedules. The Center pays for employees' tuition and books and allows any employee who meets the University's entrance requirements to enroll in the degree program. The program currently enrolls some three dozen employees per semester. For students who miss class, videotaped class sessions are available through the Center's library for review and study.

Public Safety

The "urbanization" of America has created new challenges for public safety professionals. The growing volume of commuters traveling from "edge cities" to work poses logistical nightmares for traffic safety and mass transit professionals. Increased population density presents new problems for fire safety workers and managers. And rising crime rates underscore the need for more police and new policing strategies.

Colleges and universities are helping federal, state, and local jurisdictions and municipalities better cope with rising public safety concerns through programs designed to train professionals in the public safety fields. Using an institution's community-oriented resources, programs tailored to meet professional needs can be delivered on- and off-campus. In addition, campuses often provide cen-

tralized locations for town meetings, bring together interested citizens, public safety professionals, and experts to discuss community needs.

▶ Fireman Training Program

The Division of Continuing Education at Louisiana State University (LSU) trains over 16,000 fireman in municipal and industrial settings each year and serves as the only state-wide training provider. The LSU Fireman Training Program offers courses to fire fighting personnel throughout the state at fire departments and satellite LSU facilities around the state. The program also provides specialized training for to public and private fire personnel concerned with industrial-based hazards and Occupational Safety and Health Administration (OSHA) regulations. The LSU program has also provided specialized training in Saudi Arabia, Kuwait, Aruba, Indonesia, and Mainland China.

"Urbanization" of America has created new challenges for public safety professionals.'

▶ Fire Protection Technology

The University of Nebraska-Lincoln Department of Evening Programs and Lifelong Learning Services, in cooperation with the College of Engineering and Technology, awards an associate degree in fire fighting. The 71-hour program is conducted in Omaha and provides information on how to protect the lives of fire fighting personnel and citizens' property. The program uses University engineering faculty and fire protection professionals who guide students through the maze of fire fighting technology, such as fire suppression, chemical fires, fire fighting equipm. nt, arson and investigation, hazardous materials management, and fire dynamics. Course classes are repeated twice weekly to help students accommodate their studies to their weekly work schedules. In addition to fire fighters, the degree program attracts insurance investigators, safety officers, and engineering students who want to gain knowledge and credentials in fire fighting technology and procedures.

▶ Law Enforcement Leadership Certificate

Police officers are learning to be more effective in their work through a University of Utah Division of Continuing Education program. The Division operates the Law Enforcement Institute, which offers a 120-hour program for law enforcement professionals. The graduate-level certificate program is designed for professionals who need to learn more about management strategies, human resources, budgeting, and leadership in the law enforcement field. The program utilizes an interactive format, which includes small group discussions, r search, and simulations. The aim of the program is to improve law enforcement professionals' managerial skills and help them make the most effective use of law enforcement resources in fighting crime and building community relations.

▶ Law Enforcement and Fire and Rescue Training Institutes

The Division of Extension at the University of Missouri-Columbia operates two institutes to serve the education and training needs of state public safety personnel. The two institutes serve law enforcement and fire and rescue personnel. Together, they constitute important education and training resources for Missouri's fire fighters, allied emergency service personnel and law en-

forcement officials. Many of the institutes' courses are delivered in the local communities, and faculty employ a range of distance education and outreach techniques to deliver the courses locally.

Retreading Engineers

The rapid pace of technological change and the reorganization of the workplace has led to the acceleration of occupational knowledge obsolescence, particularly in the technology dependent fields of engineering sciences.colleges and universities offer a range of programs, both degree and non-degree, to assist engineers and computer scientists to upgrade and to update their skills and technological literacy. A large number of such programs use educational technologies to reach engineers and scientist at work, or at remote sites closer to where individuals live.

▶ CATECS

For 10 years, the Center for Advanced Training in Engineering & Computer Science (CATECS) has delivered graduate-level courses via live television broadcast with two-way audio or videotapes directly to the work site. Under the auspices of the Division of Continuing Education at the University of Colorado at Boulder, the CATECS program enables area companies to sponsor engineers and computer scientists to take courses for professional development or work toward a master's degree in Aerospace, Civil and Environmental, Computer Science, Electrical and Computer Engineering, Software Engineering, Mechanical Engineering, Telecommunications, or Engineering Management. By allowing students the option of live broadcast or videotaped courses, the CATECS program allows busy professionals the opportunity to upgrade their skills and update their engineering competencies at times and locations most convenient for them. In addition to credit and degree courses, the Division maintains a videotape library of some 80 courses in engineering and computer science.

▶ Continuing Engineering Education

The George Washington University Continuing Engineering Program offers a series of non-credit, intensive short courses designed to enhance the competence of practicing engineers, managers, and scientists. The program was specifically designed to update an engineering or science degree. Courses run all-day, typically for three- to five-days, and are offered at the University's main campus easily accessible via Metrorail to the many professionals working in the government agencies, corporations and laboratories ringing the city.

▶ The Engineering Academy

The Engineering Academy of Southern New England represents an innovative approach to lifelong engineering education designed to prepare engineers throughout a heavily industrialized region of the country traditionally dependent upon defense and manufacturing industries. Funded through the federal Technology Reinvestment Project, the Academy brings together three land-grant universities (the University of Connecticut, the University of Massachusetts, and the University of Rhode Island), the Hartford Graduate Center, the School of Technology of Central Connecticut State University, the

Connecticut Community Technical College System, and numerous corporations and public agencies. The Academy develops new curricula and provides engineering education to talented young people, practicing engineers, engineers seeking to enhance their skills within their specialty areas, and those seeking to make mid-career transitions. Collaborating with industry, the participating institutions are redesigning undergraduate, graduate, and postgraduate curricula to prepare engineers to meet corporate needs in the global, high technology economy. Transition programs will also assist displaced engineers to return to the classroom to prepare for new careers. Spearheaded by the University of Connecticut's School of Engineering, the Academy's work is under the auspices of the Division of Extended and Continuing Education.

▶ Workforce Development Partnerships

Wichita State University Division of Continuing Education, in partnership with the Wichita Area Vocational Technical School, has created the Wichita State University Associate of Applied Science Degree in Electrical Engineering Technology. This collaborative program for engineering education was created to address demands by area aviation and manufacturing firms for employees with technical training in electronics and higher skills relevant to the emerging "total quality" workplaces of the 1990s. Wichita State offers 12-18 hours of general education course work, while the Vocational Technical School provides 52 hours of mathematics and technical course work necessary for occupational certification. Wichita State also provides a range of student support services, such as: admissions and registration; academic advising; placement testing; and articulation and transcript analysis.

▶ Vermont Educational Consortium

The University of Vermont, together with the Vermont State College System, is providing education and training courses and degrees to engineers and others employed at the IBM computer chip manufacturing plant located in Burlington. The Educational Consortium received a three-year grant from IBM in 1994, to provide for all the education and training needs of some 6,300 employees working at its manufacturing plant. IBM executives made the decision to "outsource" the education and training function to the University because of the capabilities of a major university to respond quickly with courses, degrees, and other educational services. The Educational Consortium is overseen by a Management Training Council, and provides everything from employee orientation sessions to doctoral degrees.

▶ Corporate Engineering Program

Four companies, 3M, General Electric, INTEL, and Hutchison Electronics have contracted with the University of North Dakota to provide the last two years of an engineering degree to their employees via videotape. The videotape format was selected in consultation with the University and the companies because it easily accommodates the different schedules of employers. The companies assist their employees with the tuition and also help the University by subsidizing the program. Employees who participate in the university degree program are located throughout the country, but they begin and end classes at the same time as on- campus students.

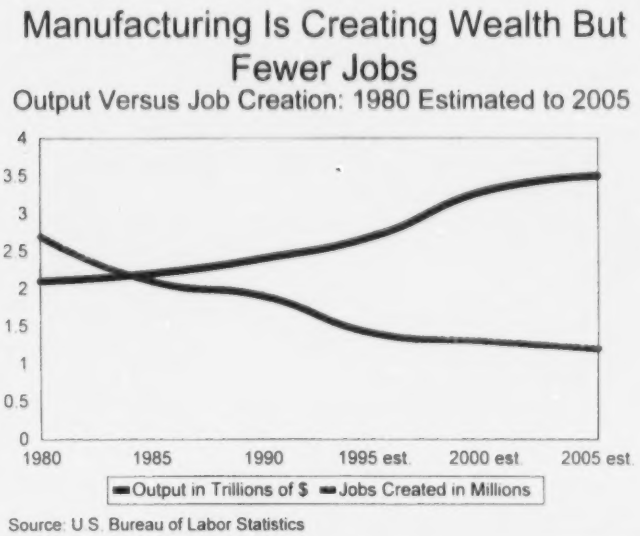
THREE

Qualifying for the Economy's New Jobs

The United States' economy is undergoing profound transformation. Within the space of a few decades, the country has moved from being the primary consumer of its own products, to that of global importer and exporter. Work is being reorganized, quality has become the end game, and knowledge workers the chief commodity.

Domestic productivity growth was significant between 1948 and 1973, averaging 2.5 percent annually. After 1973, the U.S. economy entered a period of slow growth, briefly interrupted by small growth spurts following the 1974, 1982, and 1991 recessions. Today, productivity gains are coming from the reorganization

Figure C



of the workplace but at the cost of jobs. Companies are streamlining their organizations are doing more with fewer employees (see figure C preceeding page).

From the board room to the factory floor, the way the country works is being transformed. Technology is connecting producers directly with consumers, enabling producers to respond quickly to consumers' tastes, while allowing them to exercise more control over quality and service. Employees are being organized into creative teams, more involved in managerial and R & D decisions.

Contract education programs are providing customized learning modules that lessen the time-away from work. Colleges and universities are helping employees prepare for new markets and to take advantage of new competitive niches. Distance education programs are connecting the academy with industry through a growing range of media and media-based applications. Governments, too, are seeking to change the way they do business. There is a growing emphasis on customer service and innovation.

With the scaling back of traditional industries, including the defense industry, and corporate downsizing, people are being forced out of the workforce well before retirement age. The rise in the number of dislocated Americans has prompted the development of programs designed to retrain individuals for new employment opportunities. At the same time, many mid-career professionals are finding that they too must return to the classroom to acquire new knowledge and skills and maintain occupational effectiveness.

"Work is being reorganized, quality has become the end game, and knowledge workers the chief commodity."

Coping with Mid-Career Transition

Globalization means that more mid-career professionals need to adapt both to changing occupational requirements and the reorganization of jobs. The rapid pace of technological change and growing complexity of today's workplace are helping to generate demand for educational programs tailored to mid-career professionals, and programs that allow mid-career professionals to gain new skills without jeopardizing their work time.

College and university continuing education divisions are responding to the changing needs of working professionals by offering mid-career programs through an array of delivery modes. Today's professionals place a premium on convenience. They need educational programs that not only provide state-of-the- art curricula, but also afford maximum accessibility to accommodate myriad professional and family obligations.

▶ CALL Network

Thomas Edison State College in Trenton, New Jersey, recently unveiled the most complete higher education system available on computer. The Computer Assisted Lifelong Learning (CALL) Network offers a broad range of services designed to accommodate the needs of busy professionals seeking to access the range of educational programs offered through Thomas Edison State College. The CALL Network functions similarly to other popular on-line computer networks, such as Prodigy and Compuserve, but is designed to facilitate students' access to the College and its degree programs regardless of where they might reside. Students receive their own telecommunications software package, enabling them to connect from home or the office through a modem-equipped personal computer from anywhere in the world. Students register for classes, participate in computerized discussions with College personnel, send and receive electronic mail, and can use the on-line admissions application. And through an equipment grant from the Digital Equip-

ment Corporation, the College has a limited number of computers that can be loaned to students at no charge through the CALL-PC program. CALL is available through the Internet computer network worldwide, enabling professionals to access courses anywhere in the world, and even while traveling in aircraft at 30,000 feet.

▶ Higher Education Training Partnership

In the past when the State of Utah wanted to provide higher education to its workforce, it used a competitive bid process involving all the state institutions of higher education. The process promoted competition among institutions and yielded programs of varying quality. With help from Continuing Education at Weber State University, the Higher Education Training Partnership was formed to address state employees' education and training needs most effectively and eliminates competition among institutions. A partnership among Weber State University, Utah State University, University of Utah, Salt Lake Community College, Utah Valley State College, Snow College, College of Eastern Utah, Southern Utah University, and Dixie College, the Higher Education Training program now provides high-quality educational services to state employees through the state system of higher education and saves the taxpayers' money by using the economies of scale inherent in a partnership approach. Now the State issues a request for training and the institutions within the Partnership work cooperatively to provide the education and training based upon their resources and expertise.

▶ Graduate Education for Working Professionals

West Virginia Graduate College in Institute, West Virginia, represents a unique continuing education approach to providing graduate degree education to working professionals seeking to upgrade their credentials. Programs are delivered in traditional and nontraditional ways using a small number of full-time faculty, complemented by a cadre of expert adjunct faculty recruited from higher education institutions, business, industry, and government. The College offers 14 master's degrees and numerous professional development programs throughout the state based on need in business, engineering, science, and education. The College also offers a Ed.D. jointly with Marshall University and West Virginia University. The College makes extensive use of alternative delivery systems, including television courses and other offerings of the Satellite Network of West Virginia (the distance education consortium of the state's public colleges and universities). The satellite system enables students to gain access to one-way video and audio courses. A telephone bridge provides two-way audio that can be accessed by any touch tone telephone. A compressed video system provides two-way video and audio over dedicated telephone lines. The Internet is also used, along with a microwave system. Telecourses distributed by West Virginia public television are also used and are available on broadcast or cable television.

▶ Statewide MBA Video Degree Program

Portland State University in Portland, Oregon, is using distance education to deliver a Master of Business Administration (MBA) degree to students, regardless of where they reside in the state. The Statewide MBA Degree Program is identical to the on-campus MBA program, and is delivered to 13

sites across the state, enabling students in less populated areas to access a major university degree program. The program uses a combination of videotape, satellite, and computer- conferencing. The off-campus sites are located around the state, including community colleges, four-year colleges, and corporate sites where students then can pursue graduate-level studies. University faculty and graduate advisors are available toll-free, five days a week to answer students' questions and to help with their studies. The program consists of 24 courses, and enables students to complete their degrees within three years by taking two courses per term. Students complete their assignments by mail or UPS and must meet the same deadlines as on-campus students. Exams are given at the various program sites, with monitors serving as proctors. So far, the program has graduated over 100 students. Portland State officials are now planning to extend their Master of Social Work degree, the only such degree offered in the state, to students live via satellite technology by autumn of 1996.

Assisting Dislocated Americans

The number of individuals being displaced due to economic restructuring continues to grow. While many individuals eventually become reemployed, those with narrow skills or highly specialized knowledge, or those unable to locate job skill and job search resources in their communities often have the hardest time finding new jobs. Often, a mismatch exists between employees' skills and potential employers' needs. For these individuals, retraining and a host of support services may be required to get them back in the permanent workforce. Most displaced employee programs involve collaborative efforts among private industry councils, which in themselves constitute partnerships between government and industry, higher education institutions, and community and volunteer organizations.

Efforts to assist displaced employees are accelerating and becoming more collaborative. College and university continuing education programs are helping to target displaced employees and provide them with a range of support services. Skills such as resume writing, job interviewing, and job search are every bit as important as acquiring education and new credentials. Continuing higher education's outreach ability to local businesses and employers also helps in locating potential jobs and in networking efforts.

"Efforts to assist displaced employees are accelerating and becoming more collaborative."

▶ Alliance for Workforce Development

A collaborative venture involving Indiana University East, Indiana Vocational Technical College, and Earlham College offers training and job search to displaced workers. Created in 1991 in response to layoffs and plant closings in eastern Indiana, the program is now part of the Alliance for Workforce Development. This public/private initiative assists the Richmond, Indiana community's displaced workers by providing job search skills courses on resume writing and job interviewing, job assessment and telephone job searches.

▶ State Employer Tax Fund for Training

In 1991, the Hawaii State Legislature enacted a tax on employers in order to create an education and training fund for state residents. The University of Hawaii at Hilo's College of Continuing Education and Community Service was designated as one of the training providers for the island of Hawaii. The Col-

lege provides customized training at times and locations convenient to individuals. Programs are held on the University campus, in shopping malls, and other locations readily accessible to businesses and employees. In addition, the College has been able to assist workers displaced from Hawaii's sugar plantations by using special dislocated workers funds available through the state employer tax fund.

▶ Displaced Worker Training Program

The University of California-Los Angeles Extension's Displaced Worker Training Program helps workers in the region affected by corporate downsizing to retrain and find new jobs. Developed in partnership with the City of Los Angeles, California, the LA Private Industry Council, the UAW-Labor Employment and Training Corporation, and the State of California Employment Development Department, the UCLA program provides displaced workers with free tuition so that they can complete a certificate in computer or health care management. The program also provides career counseling sessions, job placement assistance, and other support services, such as financial aid for child care for those with dependent children.

▶ Workforce Development Center

The State University of New York-Stony Brook established the Workforce Development Center in 1992 to respond to pressing regional economic needs. The Center serves displaced professionals through a range of curricula and interventions. Displaced professionals are given career counseling, and services aimed at helping to ease the initial anger and depression that often results from job-loss. Individuals select appropriate courses from offerings that include computer applications, communications skills, career assessment, and workplace leadership. Center students attend classes with employed students in order to increase networking and communication among employed and unemployed students.

Managing Technological Change

Between 1980 and 1990, information technologies increased six-fold as a percentage of U.S. companies' capital investment. In little more than a decade, the personal computer has changed the way people work. By 1994, more than one in six Americans owned a personal computer, many with CD-ROM players and access to on-line information services. Today, the rapid development of information networks is continuously redefining the economic landscape. The need for professionals to be able to manage technology is creating demand for college and university programs designed to give people the power to exploit the productive potential of new technologies.

The need to integrate new technologies into the workplace requires a new approach to managing change. College and university continuing education programs are working closely with business and industry to provide programs tailored to the needs of employees and employers. Programs stress skills designed to take account of the potential of new technologies, as well as techniques for integrating technology into the design, production, and management processes.

▶ Master of Technology Degree

The University College University of Denver offers a master's program in technology. The degree program is designed specifically to address the needs of technology-dependent firms for managing and integrating technology effectively into the total business enterprise. Oriented toward working professionals, the program is offered during the evenings and on weekends. Program participants include professionals working in the R & D industries, the military, electric utilities, and large corporations.

Student in the University of Denver's Management of Technology program poses with Martin Marietta's Manned Maneuvering Unit

Photo by Pat Corkey, courtesy of the University of Denver

▶ Master of Science in Technical Management

To assist entry- and mid-level managers in the aviation and aerospace industries, Embry-Riddle Aeronautical University in Florida developed the Master of Science in Technical Management degree. The degree program is delivered on-site at selected industry and government locations where a minimum of 24 students have agreed to enroll in the program. The MSTM degree helps build communications and management skills of individuals employed in occupations where high technology and sophisticated technical applications are critical to business success. Structured to suit busy professionals in the electronics and aviation fields, program classes are held Friday evenings, and all day on Saturdays, every other weekend to accommodate work and family schedules.

▶ Design Technology Initiative

With the involvement of Continuing Education at The Rhode Island School of Design (RISD), the School has embarked on a Design and Technology Initiative with the Manufacturing Jewelers and Silversmiths of America. The Initiative is intended to assist the jewelry industry access to new manufacturing and design technologies, such as Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) technologies. Such technologies represent the state-of-the- art in engineering and manufacturing systems and typically require large capital outlays that renders them out of reach of many small and medium-size manufacturers. By combining the resources of the School, the professional society, business and industry, and government, however, it is hoped that the Center will enable U.S. jewelry manufacturers to compete more effectively in the global market.

Jewelry manufacturers have partnered with The Rhode Island School of Design to help retool their plants using computer-aided design.

Photo courtesy of The Rhode Island School of Design

▶ Design Of Experiment Methods

An initiative of the University of New Hampshire is helping state manufacturers increase their competitiveness by teaching their managers and engineers how to use the technique of Design of Experiment, a statistical tool, to reduce manufacturing errors and boost quality. The program, known as DOX, is offered each semester, with a maximum of six companies participating each time. Companies send a team of three or more individuals, including process and design engineers and manufacturing and engineering managers. The teams work with university faculty on specific company design and manufacturing problems, learning how to apply DOX. The program sessions meet six times in one-day intensive sessions every two weeks and are held on campus. During the intervening weeks, students apply their knowledge to specific company problems. At the conclusion of the semester, the University hosts a symposium where program results are shared with senior executives from the participating companies. To date, the University has served 36 major companies by helping them to reduce their production costs and improve product quality.

Supporting Workforce Diversity

Changing demographics and immigration are helping diversify the American workforce, while transnationalism in business and trade is creating both new opportunities and challenges to harnessing the power of diversity. For example, it is estimated that some 140 different languages are spoken by students in the California public schools.

College and university programs that teach cross-cultural communication skills are helping governments, businesses, and social organizations benefit from cultural diversity. Programs range from language instruction to cultural immersion for teachers and educational administrators grappling with the challenges of the multi-cultural classroom.

▶ Workplace Language Program

Beginning in 1990, the University of California-Irvine identified a pressing need in its community for language courses for non-native speakers of English. UC-Irvine Extension recognized that many non-native professionals who possesses adequate English-language skills are seeking specialized high level language courses. Irvine offers both on-site programs tailored to meet the needs of organizations, and evening language courses for working professionals.

▶ Cross-Cultural Education

Northern Arizona University's Office of Continuing Education offers a cross-cultural program to introduce elementary and secondary teachers and administrators to the Navajo and Hopi cultures. The educators participate in a week-long tour of the Tribal and contract schools, tribally-controlled community colleges and historical and cultural sites around Arizona. The program immerses participants in the language, culture, and history of America's native peoples. As a result of the experience, teachers bring to their classrooms an enhanced knowledge of southwestern Native American peoples.

▶ La Universidad de la Familia

California State University-Fullerton created a program to serve new immigrant families in the Anaheim school district. The program, La Universidad de la Familia, was developed in 1992 to empower newly immigrant and limited English-speaking parents having children in the fifth and sixth grades who were at risk of dropping out of school. The program provides parenting skills and cultural understanding courses to the parents to assist them with their children and foster community ties. The program also provides an incentive to children to stay in school by giving them instruction in computer skills that they can immediately apply to their classes. In addition, the program helps place children with other families in order to solve temporary child care needs or problems. So far, the program has aided some 800 children, including 160 families and has helped to strengthen communities and family structures in a culturally diverse community.

▶ Workplace Literacy Program

The Workplace Literacy Program sponsored by Harvard University's Division of Continuing Education offers employees of the institution the opportunity to improve their employment prospects by upgrading their English skills. Full and part-time employees are eligible to participate in the Program. Participants acquire the English language skills necessary to function effectively in the workplace and qualify for promotion to higher level jobs within the University community.

▶ Institute for Managing Diversity

Founded in 1991 by the College of Evening and Continuing Education at the University of Cincinnati, the Institute for Managing Diversity teaches "state-of- the-art" strategies for managing diversity in the workplace and serves as an information clearinghouse on diversity issues. The Institute also offers services to both the public and private sectors through specialized conferences, symposia, training seminars and university courses focusing on successful diversity management.

"Changing demographics and immigration are helping diversify the American workforce"

Converting Defense to Non-Defense Needs

The end of the Cold War has created new challenges for the United States. The dissolution of the former Soviet Union signals the de-emphasis of nuclear deterrence and the need to convert the military-industrial complex to peacetime needs.

Estimates on the number of military jobs to be eliminated by 1997 range as high as 1 million, or approximately one-third of the military payroll. And according to the U.S. Office of Technology Assessment, for industries like shipbuilding and repair, defense-related employment constitutes 98 percent of the United States' industry tota!. In aircraft manufacturing and

Family members of Abraham Lincoln School participating in California State University-Fullerton's La Universidad de la Familia program.
Photo courtesy of California State University-Fullerton

television and radio equipment, defense-related employment comprises nearly half of all industry jobs.

In some industries, the transition is a natural one. But for individuals who once managed guided missiles, munitions and ordnance, tanks, and other weapons systems, the transition to civilian jobs poses special and unique challenges. Programs to assist military personnel to prepare for careers in teaching, policing, and infrastructure repair and maintenance are helping many former military personnel find new careers. The challenge of transitioning military personnel involves assessing skill levels and occupational competencies, as well as helping individuals to locate new jobs and to convince employers to hire them.

The sophisticated technology that supported American military involvement in the Persian Gulf represents a major competitive advantage. Many of the technologies can be readily applied to manufacturing and consumer products. Technology transfer means building cooperative ventures between defense industries, research universities, and governments.

Defense Conversion

With military downsizing, the United States faces the challenges associated with converting military products and technologies to peacetime needs. Industries in New England and California, for example, have been especially hard hit by military and related defense cutbacks. Industries once entirely devoted to military production and supply are scrambling to find new product and service applications for non-defense markets. The Federal government and the states are collaborating to find strategies for converting military and defense industries to civilian needs. They recognize the vast potential of America's defense industries in helping to solve an array of domestic infrastructure needs.

Federal programs, coupled with state and private sector initiatives are fostering a range of partnerships focusing on defense conversion and community reinvestment projects. Colleges and universities are key players in helping convert defense industries to peacetime needs. In addition to being the largest defense-related R & D contractor, higher education possess the resources and community ties to facilitate the formation of successful partnerships to dissemination information, provide training, promote outreach, and provide a central location for defense conversion activities.

▶ Center for Commercial Competitiveness

The State University of New York-Binghamton has created a unique approach to economic development and worker training. The Center was established through a U.S. Department of Labor Defense Conversion Adjustment Program grant to assist in the conversion of regional defense industries to civilian needs. The Center welcomes partnerships with business and industry, as well as governmental and educational entities. Its principal missions are to promote world-class training for the regional workforce; fostering new enterprises; and improving the regional economic climate to benefit all companies.

▶ Merrimack Valley Manufacturing Partnership

Five regional manufacturing technology centers were established with a federal defense conversion grant by the Commonwealth of Massachusetts in partnership with industry, educational institutions, and nonprofit organiza-

tions. The five centers include the Merrimack Valley Manufacturing Partnership (serving the Northeast section of Massachusetts), which encompasses the University of Massachusetts-Lowell, Middlesex and Northern Essex Community Colleges, the Merrimack Valley Planning Commission, and other regional groups. The Division of Continuing Education at the University of Massachusetts-Lowell is supporting the partnership by offering upper level courses in manufacturing technologies and management to local industries seeking to become more globally competitive.

Retraining Military and Related Personnel

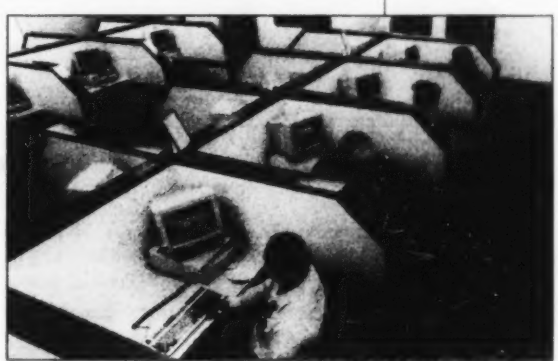
Military downsizing is also creating special hardships for military and defense-industry personnel. The reduction in military personnel creates special challenges for those individuals who are highly trained in military applications with little or no civilian complements. Conversely, maintenance and basic technical personnel trained to service military hardware often find little civilian use for their skills and experience.

Traditionally, the military services have provided service members access to educational opportunities available through colleges and universities nationwide. The military's voluntary education programs have enabled service personnel to enhance their military effectiveness and to prepare for positions of greater responsibility in the military services. Degree programs offered on military bases by colleges and universities have also helped to prepare military personnel for the transition to civilian careers once their tour of service is completed. Military education programs have sought to ensure that the credentials earned by service members are recognized equally by military and nonmilitary organizations.

"Industries once entirely devoted to military production and supply are scrambling to find new product and service applications"

▶ Employee Assessment Project

The Pennsylvania State University Center for Applied Behavioral Sciences is working with the U.S. Department of Labor, State Dislocated Workers Office, and Philadelphia Private Industry Council, to study the skills of Philadelphia Naval Shipyard workers and the potential for placing those workers in other fields when the Shipyard closes under the U.S. government military base closure plan. To ease the potential for large scale unemployment in the Philadelphia area as a result of closing the Shipyard, researchers working through Penn State's Southeastern Pennsylvania Office of Continuing Education are helping to determine which Shipyard employees are most likely to find employment with little or no retraining. Those requiring retraining are also identified and being targeted.



Sixteen computer work stations enable Philadelphia Naval Shipyard employees to learn about career alternatives.
Photo by Bob Payne, courtesy of the Philadelphia Naval Shipyard

▶ Advanced Programs for Military

At the AFCENT military installation in the Netherlands, Keflavik Naval Air Station in Iceland, Yokota Air Base in Japan, Fort Still in Oklahoma, a classroom in Washington, D.C., Albrook Air Force Station in Panama, or a host of other locales, military personnel and other adults are engaged in graduate-level study that accommodates generally inflexible schedules. The Advanced

Programs offered through the College of Continuing Education at the University of Oklahoma, have pioneered an intensive teaching format based upon advanced class preparation, intensive class schedules, and an additional one credit hour companion directed reading for each class, enabling military personnel and others to learn at an advanced rate. More than 2,500 students around the world receive instruction through more than 300 classes offered each year through the College of Continuing Education. Graduate faculty from the University of Oklahoma campus in Norman travel to nearly 30 military bases and other sites around the world in order to instruct students. Students receive master's level instruction in communication, economics, education, human relations, and public administration.

Technology Transfer and Commercialization

To bolster American competitiveness at home and abroad, business and industry are investing more resources on programs that incorporate technology into the workplace. But foreign competitors like Japan, Germany, and Italy often invest more public money in their national industries than does the United States. In addition, transnational ventures, like Europe's Airbus, offer competitive advantages to manufacturing by combining the resources of several nationally sponsored corporations.

In order to assist U.S. manufacturers, government is investing billions in public/private partnerships designed to disseminate technology once dedicated to military uses for civilian application. Continuing education divisions are playing critical roles in helping to form such partnerships and in helping to dissemination information and applications to business, government, and other economic development organizations.

▶ Certificate in Technology Transfer and Commercialization

The Center for New Venture Alliance, a part of the School of Business and Economics, offers a certificate program in conjunction with Division of Extension, California State University-Hayward. Originally created in 1992, the Certificate In Technology Transfer and Commercialization has been of special help to engineers and defense industry workers transitioning to the commercial world. The program focuses on practical ways to transfer technologies from engineering and scientific research laboratories into commercial products. The certificate program's goals are to: 1) train managers of technology transfer and commercialization; 2) support organizations involved in technology transfer and commercialization; and 3) create and disseminate technology transfer and commercialization standards and teaching tools locally and nationwide. The program consists of 96 hours of classroom instruction, the equivalent of 6 courses, offered at the Lawrence Livermore National Laboratory.

▶ The CONNECT Program

Begun in 1986, the University of California-San Diego's CONNECT Program links the multiple resources found in the San Diego area to facilitate the process of technology transfer and commercialization. The program, developed under the auspices of the University's Extension Division, supports high technology entrepreneurs by creating opportunities for business and collaboration. CONNECT also helps increase interaction between campus-

based researchers and industrial scientists, and provides technical briefings and education about technological applications. In addition, the program provides one-on-one technical or managerial assistance to individual entrepreneurs or industries. And CONNECT helps raise community awareness of issues affecting the development and application of high technology, while providing a community resource for data and information on the status of research activities and business development in the high technology sector.

Information Sciences

Technology is revolutionizing libraries worldwide. Librarians are now confronted with a maze of electronic data storage and retrieval technologies, most of which did not exist five years ago. More Americans have access to on-line information networks. Sales of CD-ROM players and modems are helping to ensure that more and more homes and businesses are becoming information clearinghouses.

The revolution in information sciences is creating demand for programs to help librarians and others manage and access new technologies efficiently. In response, colleges and universities are creating new programs in library science and information services.

"Technology is revolutionizing libraries worldwide."

▶ Library Assistant Certificate

Saint Xavier University in Chicago, Illinois, offers individuals the opportunity to earn a certificate to qualify them to become library assistants. Today's libraries require qualified, well-trained personnel who can deal with the multitude of information requests and technologies employed by modern libraries. Xavier assists students to become competent members of the information services industry by preparing them to work behind the scenes. The certificate program teaches students how to deal with library patrons, operate the library circulation desk, process informational materials, repair books, enter data, conduct children's story hours, and run audio/visual equipment. The program combines classroom lectures, hands-on experience, and field trips to prepare students to assume their roles as library assistants.

▶ Library Science Through Correspondence Study

The University of Idaho offers school teachers and others the opportunity to earn as many as 19 credits in library science through correspondence study. The program is targeted at school teachers seeking to obtain an additional credential, library employees wishing to serve their libraries and communities better, individuals interested in joining the library science profession, or students who are unable to attend regular university classes in library science. For teachers possessing Standard or Advanced Elementary or Standard or Advanced Secondary Certificate, the library science program enables them to earn an Education Media Generalist designation recognized by Idaho public schools. Courses include computer applications in libraries, cataloging and classification, acquisitions and collection development in libraries, use of the school library, introduction to reference work, and organization and management of small libraries.

▶ Master's Degree in Library Science

In 1991, the University of Arizona Extended University collaborated with its School of Library Science to create a video-based, library science graduate degree. Now, working with the Western Interstate Commission for Higher Education, the Extended University serves some 200 degree seeking graduate students annually in 18 states and 42 different locations. Graduate courses are offered at sites across the state and to individuals with access to the Internet, the computer information network. Students view videocassettes weekly and communicate with their professors and classmates through electronic class discussion lists and using the Internet. Through its curriculum and teaching format, the program is helping prepare the next generation of library science professionals.

FOUR

Operating On One's Own

"Downsizing" and "rightsizing" are euphemisms for eliminating jobs.'

Economic "downsizing" and "rightsizing" are euphemisms for eliminating jobs. In an effort to boost productivity, companies are trimming the ranks of their workforces. The hardest hit by downsizing has been middle-management. Since the beginning of the 1991 recession, mid-career professionals have found themselves suddenly unemployed. Corporate layoffs are expected to continue are remain steady (see figure D next page). Many of these individuals have joined the ranks of highly skilled Americans working for themselves. At the same time, adults of retirement age are choosing to work longer and, in many cases, make career transitions late in life. Many other professionals are finding part-time or temporary employment a better alternative to joblessness.

Current U.S. Census Bureau estimates place the number of part-time and temporary jobs at 24.4 million. This number is represents some 22 percent of all employed Americans. And U.S. Bureau of Labor Statistics data show that 15 percent of the all the new jobs created last year came from employment with so- called "temp" agencies, which place people in short-term positions with companies according to workforce needs.

Workforce gains and losses in large and small industrial companies show major disparities. According to a recent Wall Street Journal article, the nation's 500 largest companies eliminated more than 1.3 million managerial and supervisory jobs between 1987 and 1992. By comparison, small manufacturers (fewer than 100 employees) helped to create 483,000 jobs during the same period.

According to U.S. Department of Labor statistics, heavy manufacturers logged the most impressive productivity gains during 1993, yet average hourly wages at those firms fell by two-tenths of one percent. The numbers indicate that firms are generating profit through downsizing and by holding wages down.

Small Business Programs

America's small businesses are critical to competitiveness and employment. These same business often face the greatest obstacles to success and continued viability as the economy undergoes rapid transformation. Yet these businesses represent an important source of job creation, innovation, and economic development.

College and university continuing education programs are responding to the needs of small and family owned businesses. Using partnerships and a variety of delivery modes, continuing education divisions are helping to identify and service businesses within their communities and adjacent regions. Such efforts assist small and family owned businesses while also enforcing the role of higher education institutions as community-based organizations.

▶ Family Business Center

The Family Business Center of the University of Massachusetts at Amherst Division of Continuing Education is assisting family-owned businesses in Western and Central Massachusetts and Northern Connecticut and adjoining areas. There are an estimated 2,850 businesses with annual sales over $1 million located within the four primary western countries served by the University. The Center's mission is to stimulate, generate, and disseminate information on issues of particular relevance to family owned businesses. Such enterprises often confront a unique set of inter-related economic and social challenges that can impede business. The Center fulfills this mission through specialized forums and conferences that attract family business participants. The Center also facilitates dialogue among family business owners so that they might share common concerns in a non-competitive environment. The Center also aids these business owners by helping them to connect to the many support services available through a major state university. Participants also help University faculty with their research and understanding of family owned businesses through direct interchange of knowl-

Figure D

edge and experience. Finally, the Center assists the University to fulfill its public service mission by providing outreach to business and community groups.

▶ Small Business Development Center

With assistance from the U.S. Department of Housing and Urban Development (HUD), the University of Wisconsin-Extension the University's Small Business Development Center is providing small business education program through distance education technologies. By using distance education technologies, University Extension can provide a greater number of program offerings to larger and more diverse audiences. Created in 1979, the Center has been assisting Wisconsin's small business community by providing continuing education programs designed to enable them to adapt and succeed in a marketplace that has been experiencing rapid change and business turnover. The assistance provided by HUD enables the Center to research and apply a variety of distance education technologies in delivering Center programs, including the use of satellites, interactive computer-based learning systems, and compressed video. The Center is a partnership of the U.S. Small Business Administration, the University of Wisconsin-Extension, and University of Wisconsin System campuses in Eau Claire, Green Bay, La Crosse, Madison, Milwaukee, Oshkosh, Parkside, Stevens Point, Superior, and Whitewater.

"Entrepreneurs have contributed to building America's economy"

Programs for Entrepreneurship

Entrepreneurs have contributed to building America's economy and to the creation and innovation of new services and product lines. Such individuals often represent the first line of response to changing economic conditions and economic needs. Finding capital and potential partners to invest in new ventures and ideas is a constant challenge for entrepreneurs. Often, there are few opportunities for such individuals to network in neutral or non-competitive environments that promote development of ideas and alliances without increasing direct competition.

As with small and family owned business programs, college and university continuing education divisions are responding to the needs of entrepreneurs through programs designed to facilitate conversation, identify resources, and put individuals in touch with their peers in non-competitive situations. These programs help regional economies by supporting the growth of new ventures, while again helping a higher education institution to strengthen its role as community resource and facilitator.

▶ Technical Professions

The Sellinger School of Business and Management at Loyola College in Baltimore, Maryland, offers a Certificate Program in Entrepreneurship for the Technical Professions. Designed especially for manufacturing engineers, computer scientists, biomedical engineers, and other technical professionals, the Certificate Program assists entrepreneurs in their business plan creation, new product development, turnaround and business growth concerns with the assistance of mentors chosen for their expertise. Often mentors are selected on the basis of their own entrepreneurship, having started successful companies of their own. The program consists of a series of sessions conducted over a 10- month period. Real life experiences, case studies, guest lectures and simulated exercises are used in the sessions.

▶ Entrepreneur's Roundtable

Sponsored by the University of Maryland Baltimore County Continuing Education, the Entrepreneur's Roundtable helps bring together Baltimore Metropolitan area entrepreneurs, existing and aspiring, experienced entrepreneurs, potential investors, and experts in various areas of interest in entrepreneurship. The Roundtable meets five times a year. Participants have the opportunity to present their specific problems and to seek assistance of invited experts and from their peers. Topics of recent and planned Roundtable discussions include "Structuring, Negotiating, and Closing A Venture Capital Deal;" "Starting and Managing a Growth Company;" "The Franchise Option;" and "Entrepreneur Success Stories." Program participants include individuals considering starting a business, new business owners, entrepreneurs seeking contacts with financial sources, small business owners looking to diversify into new product lines, corporate executives with new responsibilities for development and entrepreneurship, and individuals interesting in innovation and entrepreneurship.

▶ Certificate Program in Nonprofit Management

Duke University is assisting managers of nonprofit organizations to stay abreast of rapidly changing business and economic developments. Begun in 1989, the Duke Certificate Program in Nonprofit Management helps strengthen the organizational and management skills of paid professionals and volunteers in nonprofit organizations in the North Carolina Triangle Region (Raleigh, Durham, and Chapel Hill). The program has spread across the state and is now supported through a grant from the W. K. Kellogg Foundation. Partnerships between Duke University and the nonprofit community are helping to expand the program. The program requires 50 hours of instruction and at least eight courses, and will soon expand to include a distance education component. Duke also offers an annual, supplemental Institute in a retreat setting, which helps nonprofit managers focus on specific topics in an intensive format.

Working Beyond Retirement

Increasing numbers of older adults and retirees represent a growing resource for the nation. Such individuals represent important sources of talent and experience that could be tapped to address social and community needs. With the labor force growing older and fewer new entrants joining the labor force, older adult and retirees are either being drafted back into service, or continuing to work longer. And many retirees are finding their leisure time to be unsatisfactory and/or their financial resources insufficient to sustain them and are seeking to rejoin the labor force, often on part-time basis.

Continuing education divisions are enabling older adults and retires to return to the academy and to their communities as volunteers, mentors, teachers, and full- time professionals. Such programs emphasize an inter-generational approach, bringing older adults and retirees together with other individuals in a community of learning and sharing. These programs also help respond to areas of need, such as the increasing demand for classroom teachers, tutors, mentors for young people, by helping older adults and retirees to train and prepare for such assignments in the community. As the population continues to age, older adults

and retirees will become even more essential resources for employers, schools, community-based organizations, and colleges and universities.

▶ Center for Creative Retirement

The Center for Creative Retirement at the University of North Carolina at Ashville was established in 1987 to promote opportunities for lifelong learning and community service for adults of retirement age. The Center offers a range of educational and service programs, including the College for Seniors, which enables older adults from varying professional backgrounds to offer courses in variety of subjects. The Senior Academy for Intergenerational Learning matches retired professionals with University undergraduates and public school children as tutors and mentors. The Center also houses a Research Institute that conducts regional studies on the economic and social impact of retirees. The Seniors in Schools program provides a large corp of retirees to public schools, where they tutor, mentor, present enrichment programs, serve on school committees and organize special projects within the schools.

"Older adults and retirees represent a growing resource for the nation."

Programs for older adults and adults of retirement age are popular and proliferating
Photo courtesy of the Academy of Lifelong Learning, University of Delaware

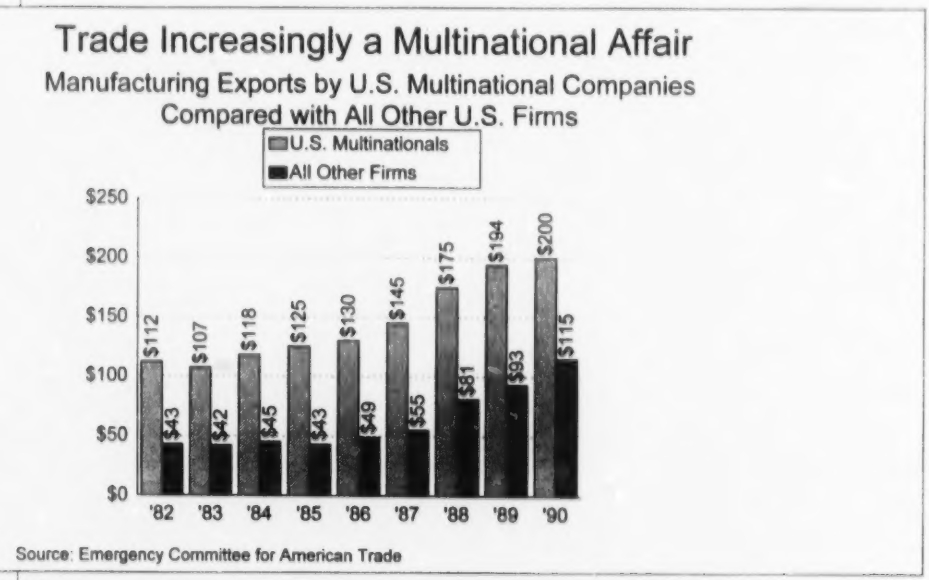
FIVE

Functioning Transnationally

In a global economy, a high quality workforce increasingly determines a nation's competitive advantage. Already, firms are moving their operations around the world in order to take advantage of abundant, skilled labor resources. American companies, too, are reaching across national boundaries to identify and recruit creative employees willing to relocate, or in countries where labor costs are less.

Today's venture capitalists recognize that economies are becoming increasingly interdependent. Events on Wall Street reverberate in other markets instantaneously, thanks to the electronic linking of trading and exchange markets. Corporate investment strategies must take account of world events and international market trends. According the U.S. Office of Technology Assessment, American companies invested almost $5 billion in overseas communications technologies in 1991 to build better communication links with foreign firms and governments.

Figure E



U.S. multinational corporations accounted for nearly two-thirds of all U.S. exports between 1982 and 1990 according to the Emergency Committee for American Trade (see figure E preceeding page). Export success by American multinational corporations has been a result of increased growth in U.S. foreign investment. And U.S. exports to Mexico increased 44 percent between 1990 and 1992, and 8 percent to Canada, according to a study by U.S. News & World Report.

Economic globalization is bringing with it increasing internationalization of professional and business standards. In order to compete effectively, nations are negotiating common standards, both in the manufacture of goods and in the provision of services. And the European Union, North American Free Trade Agreement (NAFTA), and recently approved General Agreement on Tariffs and Trade (GATT) are creating challenges to remove trading obstacles in order to compete cooperatively.

"Venture capitalists recognize that economies are becoming increasingly interdependent."

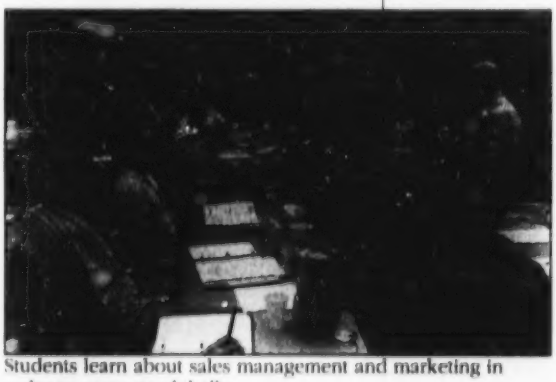
International Management & Marketing

With more of America's economic future tied to exports and the ability to compete globally, U.S. managers need to develop international marketing strategies. This implies that successful marketing plans must take account of differing needs and perspectives. In addition, managers and exporters need access to information about trends in the global economy and business opportunities abroad.

Programs that grant credentials in international marketing and management are a growing programmatic area for colleges and universities. Also, many continuing education divisions regularly convene conferences and workshops that bring together U.S. businesses with their foreign counterparts in an effort to facilitate transnational exchange and communication.

▶ Executive Program in Sales Management & Marketing

Syracuse University Continuing Education offers an executive education program in sales and marketing management available to experienced sales and marketing executives working around the world, helping them to compete globally. Offered as a partnership between Syracuse University and the Sales and Marketing Executives-International, the program encompasses two, 10-day summer sessions, with one session each year. During the first session, students focus on internal operations of firms. During the second session, students focus on global and strategic issues affecting marketing activities. Upon completion of the program, students receive a certificate. Graduates of the program are then eligible to participate in ENCORE, a two-day senior program that exposes participants to timely topics in marketing. Previous topic have included Competing Abroad, Surviving at Home, and Workforce Redesign: Trend or Requirement. Students in the certificate program have come from well over a hundred different companies and involve faculty from Syracuse and other institutions.



Students learn about sales management and marketing in order to compete globally.
Photo courtesy of Syracuse University

▶ Global Market Opportunities Conference

Hosted by the Division of Continuing Education at Virginia Polytechnic Institute & State University, the Annual Global Market Opportunities Conference has brought together corporate leaders, attorneys, bankers, government officials and others interested in getting into or expanding their knowledge of the world of global exporting and importing. Focusing on a different region of country each year, the Conference exposes participants to the range of economic opportunities available overseas, as well as to native culture and even cuisine. Perhaps the greatest benefit to participants is the opportunity to interact with foreign business and corporate leaders who typically attend the conferences and tour sites in Virginia, West Virginia, and Ohio. The Conferences are held in the Donaldson Brown Center for Continuing Education Hotel and Conference Center on the Blacksburg campus near Roanoke. The location affords participants with the nature beauty of the Appalachian Mountains and a relaxed setting that fosters conversation and interaction among conferees.

▶ International Business Education

Serving an international business community, the Division of Continuing Education at Florida International University in Miami offers a certificate program in international business. The curriculum includes courses in international marketing, developing international businesses, negotiating international business agreements, and developing international marketing plans and strategies. The program courses are taught by members of the international business community and university faculty. Many program participants are sponsored by their employers. In addition to the certificate program, courses are offered in warehousing and distribution, the impetus coming from the fact that Miami serves as a major shipping and distribution point for products from around the world.

▶ Banking and Financial Services

A multi-program partnership between the University of Delaware and MBNA, Inc. is helping one of the largest U.S. financial services/credit card companies remain competitive in a global market. MBNA, Inc. employs over 6,000 individuals and operates 365 days a year, around the clock, and employs the largest number of "first career" adults in Delaware. The Program provides on-site degree programs, a Master of Business Administration and Master of Arts in Liberal Studies, and a wide variety of undergraduate courses to company employees. In addition to courses, Delaware provides on-site academic advising, registration, and career counseling. The goal of the Delaware/MBNA model is "one-stop" education, with a business and university allied to provide specialized education and training to ensure corporate competitiveness in a fiercely competitive industry.

▶ Export Assistance Programs

The University of Illinois at Urbana-Champaign is supporting small and medium-sized companies located in the downstate region of Illinois seeking international markets. The University partners with groups such as the Central Illinois Exporters Association to provide information and access to export markets. Also, the University hosts seminars on export issues and regulations

relative to marketing to the European Union or Pacific Rim nations. The international affairs unit responsible for developing the University's programs for export firms is part of the Division of Continuing Education.

▶ Business/Higher Education Council

The University of New Orleans (UNO), Louisiana, Business/Higher Education Council is made up of leaders of business and other parts of the community and all of the top administrators of the University. Created through the initiative of UNO's Metropolitan College, the University's principal continuing education and outreach arm, the Council is dedicated to fostering economic development and competitiveness of state business and industry through education and workforce training. Being housed in a major metropolitan institution gives UNO's Council a unique position from which to build linkages among the academy, state businesses, government and community organizations. Since its inception in 1980, the Council has played a vital role in educating businesses about emerging issues, assisting government in enhancing economic development strategies and policies, as well as helping to attract knowledge-based industries and companies to the state.

▶ Supervisory and Leadership Effectiveness

The University of Maine is helping New England businesses to increase their competitiveness by strengthening the skills of company supervisors and managers. The leadership program developed by the University relies on the involvement of a number of organizations, including the Hardwood Products Company, Moosehead Manufacturing Company, Pride Manufacturing Company, Guilford of Maine, and School Administrative District 4 Adult Education. Those served by the program have included company executives, plant managers, human resource managers, and company supervisors. The University provides a basic supervisory training course to company employees and consortial training at a local high school, three Guilford of Maine plants, two plants in Massachusetts, and the marketing center located in Michigan.

"Globalization implies U.S. citizens need to acquire foreign language competency."

Transnational Exchange Programs

Globalization also implies that more U.S. citizens need to acquire foreign language competency and an understanding of different cultures. Business and industry are seeking university programs that can prepare their employees to interact successfully with their global partners.

▶ University Exchange Program

A cooperative venture between Mississippi State University (MSU) and Meisei University in Japan offers faculty from the two institutions an opportunity to exchange places. Organized 10 years ago by Mississippi State's Division of Continuing Education, the exchange program enables MSU professors to live in Toyko and to teach English classes at Meisei University, while Meisei professors teach Japanese language and engineering courses at MSU. Faculty participating in the exchange return to their parent institutions with a more profound knowledge of the other country which they can in turn impart to their students.

▶ Joint Degree Program

University of Maryland University College (UMUC) offers a joint degree program in Business Management and Economic Relations in cooperation with two universities in Asian Russian: Irkutsk State University in south-central Siberia; and Far Eastern State University in Vladivostok. Funded by the U.S. Information Agency, the program enables UMUC faculty to teach classes in Siberia. Also, Russian students travel to the United States and spend five weeks in internship programs with local businesses in various industries. The joint degree format enables both American and Russian students and educators an opportunity to interact collaboratively and to increase cross-cultural understanding of economic and business issues facing both nations.

▶ Training and Exchange Program

The Division of Continuing Education at Kennesaw State College in Marietta, Georgia has an exchange program higher education institutions in Mainland China. As part of the program, Kennesaw has conducted six-month training programs for Chinese instructors of English. The educators traveled to Marietta to participate in business classes, meetings with faculty in both business and English, English-as-a-second-language programs, and field trips. The objective of the program is to stimulate trade between the State of Georgia and Mainland China by helping Chinese business professionals to learn English and American business management.

Summer Institutes for Professionals

College and university summer institutes enable professionals to immerse themselves in their subjects for a few weeks with a minimum of professional and personal disruption. The intensive-format allows colleges and universities to harness the intellectual and physical resources of their communities in order to provide challenging instructional programs that cover a considerable amount of material in a relatively short-time period.

▶ Summer Professional Programs

For over 40 years, the Office of Summer Session at the Massachusetts Institute of Technology has been offering summer session program series designed to help professionals keep pace with developments in their fields. The series involves MIT faculty who are experts in various fields and provide an intensive, one week learning environment for professionals from all fields seeking to enhance their knowledge. Programs can be conducted off-campus at the work site if enough employees at a business or company agree to participate. Several institute programs focus on intensive foreign language and cultural immersion programs designed to broaden perspectives and to allow U.S. professionals to communicate better with their foreign counterparts. Other subject areas for the summer session programs include applied biology/health sciences, computer related applications and topics, engineering, humanities and science, management and planning, and technical communications.

▶ Summer Institutes

New York University's School of Continuing Education offers U.S. and international professionals the opportunity to participate in one- to seven-week programs designed to build business skills and advance careers. The Summer Institutes cover a wide range of areas, including 21st century management techniques to environmental science, arts administration and television sports. The Institute offers a range of degree and non-degree programs. Programs provide in-depth learning experiences to individuals who are seeking to enhance and upgrade their skills. For instance, the Institute offers a Master of Science in Hospitality, in which some 60 percent of the students come from outside the United States. A popular non-credit program involves teaching marketing and business professionals how to use video to advance their corporate image and increase market share. The Institute also offers a certificate program in International Studies, which prepares professionals working in international business by helping them identify business contacts, acquire new skills, and experience.

"Summer institutes enable professionals to immerse themselves in their subjects"

International trade and finance programs enable business professionals to compete more effectively in the global market.
Photo by Jim Prince, courtesy of New York University

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Looking to the Future

The preceding pages have featured a few of the many college and university programs that are helping individuals to join and remain active participants in the knowledge society. The majority of these programs have come about through collaborations and partnerships among higher education institutions as well as between them and business and the professions.

Currently, the United States' public sector spends the least of any developed nation on the education and training of its workforce. This has drastic consequences for productivity, and in turn, competitiveness. America's workforce is one of the most diverse of any nation and will be more so in the future. The challenges posed by the influx of younger workers who are typically less experienced and possess lower levels of educational attainment can be addressed through continuing education. Continuous learning is one of the keys to working smarter in the global economy.

To ensure that we meet the obligations implicit in a knowledge society, several challenges must be met.

First, educational institutions, employers, and employees alike need to embrace the **reality that learning is a continuous process.** The notion of "front-loading" education and training to equip individuals with the core skills and competencies for a lifetime of work is no longer relevant to the knowledge needs of the workforce. In fact, the notion of a "career" is probably no longer valid either. With technological change and the constant reorganization of work, the notion of career has given way to a new paradigm that emphasizes the continuous renewal and re-invention of jobs, labor markets, professions, and the like.

Second, more should be done to ensure that **every individual has access to the knowledge society.** This means that colleges and universities, as well as others, should continue to reach down and into their communities to find ways to assist more Americans to reap the fruits of education and become fully vested citizens of the knowledge society. Greater articulation between and among educational institutions can create more opportunity and access for individuals wishing to pursue college and university education.

Third, **professional degree and certificate programs should take account of changing occupational competencies and the "internationalization" of**

professions. Colleges and universities can work with professional societies and organizations to ensure that programs meet international standards. Such articulation will help to ensure that American professionals are able to compete transnationally.

Fourth, **the power of distance learning technology should be exploited to make knowledge even more accessible to all Americans,** without regard to socio-economic or geographic circumstance. Colleges and universities should continue to explore new ways to use communications technologies to enhance instruction to serve diverse student constituencies. Given the costs associated with technology, colleges and universities should collaborate and forge partnerships in order to realize financial efficiencies, thereby enabling them to serve more of the population electronically.

Fifth, **programs should build upon the richness and diversity of the workforce.** College and university programs that assist new immigrants to acquire English-language skills and prepare for gainful employment, cope with multi-language workplaces, and help growing numbers of young people for whom English is a second language can help communities and the nation as a whole to profit from the richness of a rapidly changing workforce.

"America's workforce is one of the most diverse of any nation"

And sixth, **global partnerships and cooperative agreements between and among institutions should be pursued and expanded.** International exchange programs can help to prepare native faculty to become better instructors and assist professionals to become more effective.

The programs described in the preceding pages suggest how colleges and universities are helping to build knowledge connections among educational institutions and the workforce. The publication began by posing the following question, "what is the knowledge connection and how do colleges and universities help develop the nation's workforce for current and future challenges?" This publication has sought to answer that question by showcasing the dynamic responses to workforce needs by college and university continuing education divisions.

These programs and thousands more are helping respond to the challenges posed by economic transformations. College and university continuing education divisions are on the front lines of this transformation. Continuing education divisions often have the advantage of not being bound by more traditional disciplinary boundaries and, as a result, have been able to connect communities to the academy. The special ability to build bridges and foster partnerships between and among diverse groups and organizations weave the connections necessary to disseminate knowledge and develop the nation's workforce.

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ABOUT NUCEA

The National University Continuing Education Association (NUCEA) was founded in 1915 to promote excellence and expanded opportunities in continuing higher education. The Association's some 420 member institutions offer both degree and non-degree instruction at the pre- and post-baccalaureate levels to part-time students. NUCEA's membership encompasses accredited, degree- granting colleges and universities, as well as comparable non-profit organizations having a substantial involvement in continuing higher education.

Through its diverse activities, the organization works to:

- ensure part-time students' access to higher education;
- foster the development of continuing higher education programs that address diverse constituencies' occupational and intellectual needs;
- facilitate access to knowledge and practices that can enhance teaching, learning and effective program administration; and
- support the interests of continuing higher education before relevant legislative, regulatory, and policymaking bodies.

NUCEA seeks to exemplify its commitment to ethnic, cultural and gender diversity and fairness in all of its forums, both public and private.

National University Continuing Education Association
One Dupont Circle, Suite 615, Washington, D.C. 20036 (202) 659-3130

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